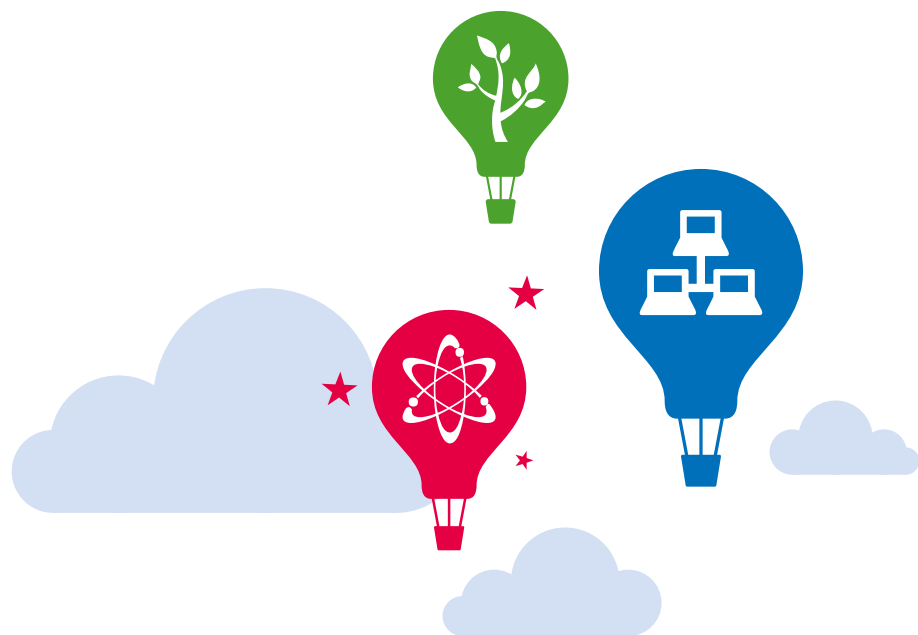


Google™ in Education



A New and Open World for Learning



Helping to create an open world of learning for open minds everywhere

In 2004, in their first annual Founders' Letter, Larry Page and Sergey Brin laid out our company's commitment to making the world a better place. They explained that Google's goal "is to develop services that significantly improve the lives of as many people as possible." Eight years on, we are proud to say that education remains one of the core pillars of this commitment.

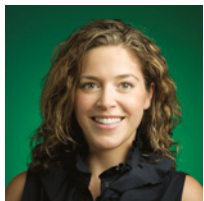
Purpose of this document

We produced this booklet for educators and the people who support them, to share the educational activities we are passionate about and elaborate on why we are committed to this work. This is not a typical "annual report," in that it is a document that we hope educators will use year round to spark new ideas and get inspiration.

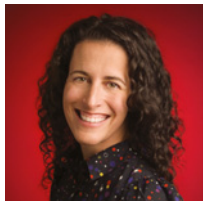
Inside, we highlight the many accomplishments made by teachers, students, and organizations using Google resources. We think it's important to showcase what we have seen work in educational technology, as well as how we've made improvements based on feedback and reflection.

We hope this report helps you discover new resources and better understand how Google tools can support learning and make your job a little easier.

Thank you for all the work you do in education, and for taking some of your precious time to explore this document.



Jordan Lloyd Bookey
- Head of K-12
Education Outreach



Cristin Frodella
- Head of Education
Marketing



Maggie Johnson
- Director of Education
& University Relations

& the Google Education Team

January 2012

About Google in Education

Education lies at the very core of our company’s mission “to organize the world’s information and make it universally accessible and useful.”

We know that leading-edge technologies will continue to play a vital role in equipping future generations with the skills they need to thrive in the workforce of tomorrow. Technology supports collaborative learning and teaching in communities around the world, so we invest heavily in education initiatives and partnerships through our products, programs, and tools.

Our education initiatives focus on three key areas:

- Making learning magical for students
- Empowering innovative communities
- Building a foundation of technology and access

Last year, Google was instrumental in providing access, resources, financial assistance, and tools to tens of millions of students and teachers in communities worldwide.

We hope that through our continued efforts, we can help raise the level of excellence, awareness, and access in education for future generations of students, teachers, and innovators.

Find out more about our education work and access a digital copy of this booklet at:
google.com/edu



Index of programs

Below is a list of the programs and resources explained in this booklet.

Making Learning Magical for Students			
Program or resource	Audience category	Geography	Page
Google Code-In	13 to 17 year-olds	Global	11
Computing & Programming Experience	13 to 14 year-olds	US	12
LEAD for Computer Science	Secondary and early college	US	14
App Inventor	All	Global	15
Google Science Fair	13 to 18 year-olds	Global	16
YouTube Space Lab	14 to 18 year-olds	Global	18
RISE Awards	Nonprofit organizations	Global	20
Trailblazer Awards	16 to 19 year-olds	Select Europe	21
Doodle 4 Google	Primary and secondary	Global	22
Summer of Code	Students in higher education	Global	26
Computer Science Summer Institute	Rising university CS students	US or Canada	27
Android Camp	1st or 2nd year university students	US or Canada	28
Scholarships, Internships, and Ambassador Program	Students in higher education	Global	30
Online Marketing Challenge	Students in higher education	Global	34
Zeitgeist Young Minds	18 to 24 year-olds	Global	35
Empowering Innovative Communities			
Program or resource	Audience category	Geography	Page
Computer Science For High School (CS4HS)	4-year Universities	Global	46
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Geo Teachers Institute	Primary, secondary teachers	Global	49
Search Education & Exploring Computational Thinking	All	Global	50
Google Lit Trips	All	Global	52
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Google Code University & Stanford Artificial Intelligence Class	All	Global	57
Google Faculty Institute	Teacher education faculty	California	58
Google Research Awards, Fellow Program, and Visiting Faculty	Higher education faculty	Global	60

Building a foundation of technology and access

All the resources in this section are available online, and are open to all.

By the numbers

Below are some of the impacts of Google in Education at the close of 2011.



1,000,000,000+
Downloads of Google Earth

\$20,000,000

Funding awarded to Science,
Tech, Eng & Math groups in 2011



5,097
Alumni of the Summer
of Code program



10,000+
Applications for the 2011
Google Science Fair

2,400+

Teachers reached through
Computer Science for High
School training in 2011



\$115,000,000
Funding to nonprofits and
organizations in 2011



15,000,000+
Google Apps for
Education Users



146

Countries in which Google
Apps for Education is used



45

States and provinces
with SketchUp Pro grants



12,000+

Students visited by Googlers
in the school visit program



\$8,800,000+

Value of scholarships
granted to 2,100
university students

107,000

Doodle 4 Google
competition entries



44, 100%

School districts attending
Google@School sessions,
percent saying they would
recommend the training
to others



100,000,000+

Views of Khan
Academy video
lessons on YouTube



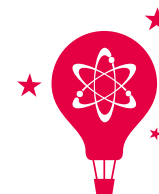
500,000+

Videos in YouTube EDU



15,000,000+

Volumes scanned in Google
Books (An estimated 10%
of the books printed since
the Gutenberg Bible!)



Making Learning Magical for Students

Pages
8 - 41

We want to spark students' curiosity to discover and engage with a whole world of exciting subject matter—particularly in the fields of computer science, technology, science, and mathematics.



Empowering Innovative Communities

Pages
42 - 69

We develop, support, and challenge communities by partnering with innovators to create new approaches to training, curricula, and research. By connecting people and ideas, we hope educators everywhere can use technology to access the best in education.

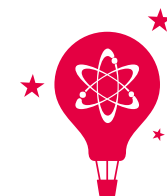
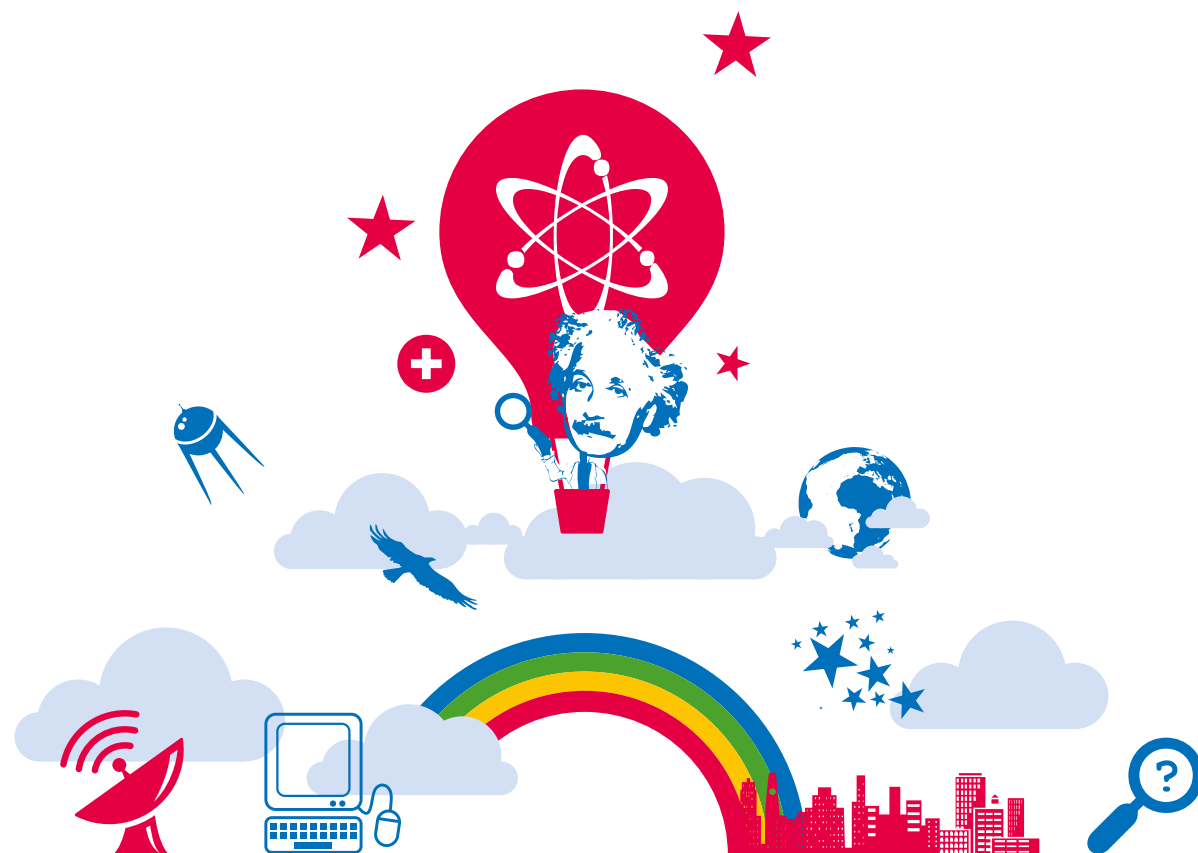


Building a Foundation of Technology and Access

Pages
70 - 91

Through easy-to-use and easy-to-access products and tools, we encourage students and teachers to take full advantage of the web and collaborate in interactive learning environments.

Making Learning Magical for Students



Programs to inspire tomorrow's digital leaders

We think students should not just be consumers of information, but co-creators of it. They should take an active role in developing the technology that will shape their futures. Learning should be magical for students and they should be inspired to take ownership of their learning.

By creating hands-on programs, scholarships and engaging curricula, we hope to inspire students to pursue higher study—and to love the subjects of science, technology, engineering, and mathematics (STEM). We aim to create more effective educational experiences that will guide the next generation of digital leaders.

Primary & Secondary

• Google Code-In	11
• Computing & Programming Experience (CAPE)	12
• LEAD Computer Science Institute	14
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Local Communities

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Making Learning Magical in Primary & Secondary Education

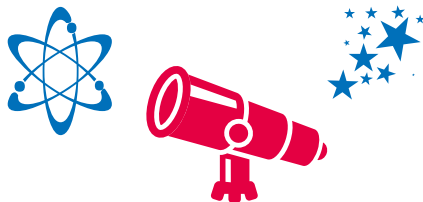
Programs, competitions, awards, and tools for primary and secondary students

Getting young students excited about and involved in STEM (science, technology, engineering, and mathematics) at the primary and secondary school level is critical—it's one of the keys to shifting them from being a group that knows the basics of new technology to a group that knows how to harness technology to create and innovate.

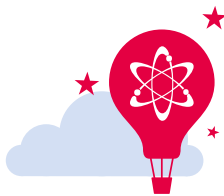
Through a variety of programs, competitions, awards, and tools, we hope to make STEM learning magical for primary and secondary students (referred to as K-12 in the United States) and to inspire the next generation of big ideas.

In this section, you can find out about some of Google in Education's initiatives in primary and secondary school:

- Google Code-In 11
- Computing & Programming Experience (CAPE) 12
- LEAD Computer Science Institute 14
- App Inventor 15
- Google Science Fair 16
- YouTube Space Lab 18
- RISE & Trailblazer Awards 20
- Doodle 4 Google 22



Learning to code while helping open source organizations



Google Code-In is a global contest that gets 13 to 17 year-old students involved in development of open source software



Open source software allows programmers anywhere to read, redistribute, and modify software source code in order to adapt it. The Google Code-In contest invites pre-university students from around the world to create code for a variety of open source organizations. In 2010, more than 361 students participated in 2,167 coding tasks!

During the seven-week 2011 Code-In, participants worked on tasks for 18 different open source organizations. Challenges included document translations, marketing outreach, software coding, user experience research, and a variety of other tasks related to open source software development.

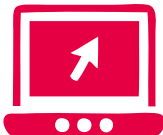
Participants earned points for each task they completed and were awarded prizes that included t-shirts, money, and certificates of accomplishment.

The 10 participants with the most points at the end of the competition received a grand prize trip to Google headquarters in Mountain View, California, where they spent the day touring the campus, meeting Google engineers, and enjoying other fun surprises.

"I'd like to personally thank you and the other guys at Google for the program. It's the first time I had someone 'nagging me' to sit and code something big for an open source project (did small stuff before), and I'm very proud with the result. I learned a lot, gained lots of experience, and had fun :)"
- Barak Itkin, student from 2010 Code-In

Learn more

For more information visit:
code.google.com/gci
2011 Code-In overview video:
goo.gl/nxUc8



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Cultivating the next generation of computer scientists

The **Computing and Programming Experience (CAPE)** exposes early secondary school students to the endless possibilities of computer science



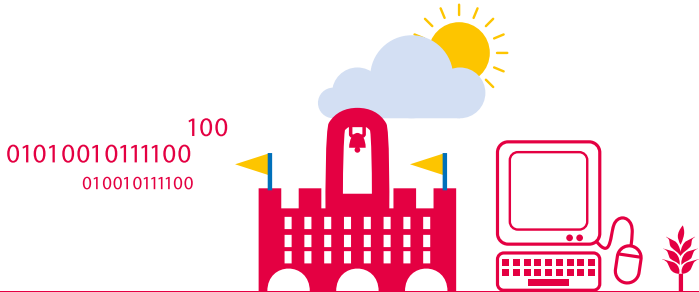
Statistics show that if we want students to love computer science, we have to expose them to it at an early age. In a recent survey of Google engineers, we found that 98 percent of Computer Science (CS) majors had CS exposure prior to college, compared with 45 percent of non-CS majors/ non-technical Googlers.

CAPE's goal is to inspire a future generation of creators in computing by bringing together some of today's brightest young students and exposing them to the possibilities of information technology in career paths such as software engineering, biology, and fashion design. Students at CAPE experience daily life at Google and witness the amazing variety of CS applications that are developed here.

They learn about all aspects of CS—from its impact on society and culture to the role it plays in work and personal lives. In 2011, we held CAPE on five Google campuses, with 120 students attending. In total, the program has more than 220 alumni who are all deeply plugged into the Alumni Program.

“At CAPE [my daughter] gained the confidence and the insight to believe, she too could master the creative tools, to be a builder and a creator – and not just a ‘user’ of applications, games, and social media...Google CAPE bridged that gap and made the possibility of learning real for her. For the first time, she felt that the mystery could be unraveled and that with time and effort, she too could be a creator and a builder.”

- CAPE 2011 Parent



Left: Participants in the Computing and Programming Experience (CAPE) at Google's campus. **Center:** Participants in a session. **Right:** Participants in front of the Bay Bridge in San Francisco.



Inspired by CAPE is a related program in which we partner with other organizations to deliver similar content to a broader audience. Last year, we piloted Inspired by CAPE with 155 students at Howard University's Middle School of Math and Science and through the Massachusetts Institute of Technology's Minority Introduction to Engineering and Science (MITES) program.

Learn more

For more about CAPE visit:

google.com/edu/cape



Leveling the playing field in computer science

Leadership Education and Development (LEAD) opens up the possibilities of CS to high-achieving African American, Native American, and Hispanic high school students in the USA

In 2011, we were proud to support our long-time partner, Leadership Education and Development (LEAD), in the first successful LEAD Computer Science Institute—a residential summer program that provides high-achieving African American, Hispanic, and Native American students with an opportunity to learn about, and be inspired to pursue, careers in CS. Together with LEAD, Google conceived of, designed, and launched the Institute, which supported 104 participants nationwide in its inaugural year. As the founding sponsor, we also provided significant financial support so that some students are able to participate on a full or partial scholarship.

Students live in college dorms, so they can attend CS classes and field trips during the day and receive support from university advisors—most of whom are African American or Hispanic CS or engineering students. Students engage in project-based team learning as well as lectures, and many visit Google offices for tours and talks to experience life at a technology company.

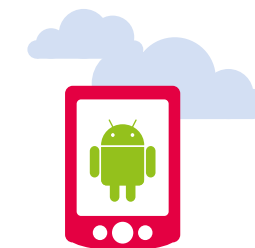
The program offers two levels for different age groups:

- **Level 1**—Hosted at Stanford University and University of Michigan, this one-week program exposes rising 9th grade students to introductory concepts in CS.
- **Level 2**—Hosted at University of California - Berkeley, and University of Virginia, this three-week program provides rising 10th and 11th grade students with broad exposure to various topics in CS as well as deep project-based learning.



Turning anyone into creators of web applications

App Inventor allows students to build their own Android apps without prior knowledge of computer programming



Students in Google summer computer science programs such as CAPE and LEAD often say that one of their favorite experiences is learning how to use App Inventor. App Inventor for Android is a programming platform Google developed to let non-programmers easily create Android apps (applications) using drag-and-drop and visual programming techniques. We estimate App Inventor has reached 500,000 users across 500 educational institutions.

In 2011, we provided \$1.5 million in funding to educational groups and organizations using App Inventor to support mobile learning. At the end of the year, we announced that App Inventor would become open sourced. A portion of the funding we provided went to the establishment of the Center for Mobile Learning at the Massachusetts Institute of Technology (MIT) Media Lab. The new center will be actively engaged in studying and extending App Inventor as well as designing new mobile technologies.

“App Inventor has the potential to transform computer science education. It is the best tool I’ve seen in terms of allowing ‘non-techies’ to write computer programs, and I’ve been teaching computer science for 17 years!”

- Dave Wolber, CS Professor, University of San Francisco

“The way App Inventor allows you to learn programming I feel that it is much easier to understand and succeed in computer science.”

- Student using App Inventor

Learn more

App Inventor will be unavailable at the beginning of 2012 while improvements are made. Stay informed of re-launch at the site below:

appinventorededu.mit.edu

See how one university is using App Inventor:

goo.gl/WIZ1S



Celebrating the curiosity of young scientists everywhere

The **Google Science Fair** is an international competition that encourages young students to find answers to big questions through scientific inquiry and experimentation



In 2012, we launched our 2nd Google Science Fair in partnership with

National Geographic, LEGO, Scientific American, and CERN. The aims of the Google Science Fair are to:

- Inspire scientific exploration and to encourage students to ask questions and be curious
- Celebrate young, scientific talent and create aspirational role models for students everywhere
- Unite students around the world in the quest for learning

In 2011 more than 10,000 students from 90 countries applied to the Science Fair. Fifteen finalists flew to Google's California offices for the weekend. Over the course of three days, the students shared their excitement for science, and at the end, three winners were selected in each age category:

- Shree Bose, 17-18, Fort Worth, Texas, USA; Grand Prize Winner
- Naomi Shah, 15-16, Portland, Oregon, USA
- Lauren Hodge, 13-14, York, Pennsylvania, USA

After their sweep, the three young women spoke at the TEDx Women conference in Los Angeles, gave interviews, and even met President Obama and officials from the National Institute of Health.



SCIENTIFIC
AMERICAN™



"We left the Oval Office feeling like our individual futures were important to the nation's future; like we could change the world."

- Shree Bose, 2011 Grand Prize Winner

Top left: The 15 Finalists for the Google Science Fair 2011.

Bottom left: Judge Dean Kamen questions Anand, a finalist, about his project.

Bottom right: Google Science Fair Winners Naomi Shah, Shree Bose, and Lauren Hodge (L-R) meet U.S. President Obama in the Oval Office at the White House. (Official White House photo by Pete Souza, October 3, 2011)

For 2012, we have made innovations to the competition, such as accepting project submissions in 13 languages, to encourage global participation and creating a Scientific American 'Science in Action' prize for a project that addresses a social, environmental, ethical, health, or welfare issue that makes a practical difference to the lives of a group or community.

Learn more

To apply to, or support Google Science Fair 2012, visit:

google.com/sciencefair

2011 Finalist weekend video: goo.gl/QGGuw

2012 Launch video: goo.gl/02u5q



Igniting students' passion for physics and space

YouTube Space Lab is a competition to conduct a student science experiment 250 miles above the earth—while the whole world watches

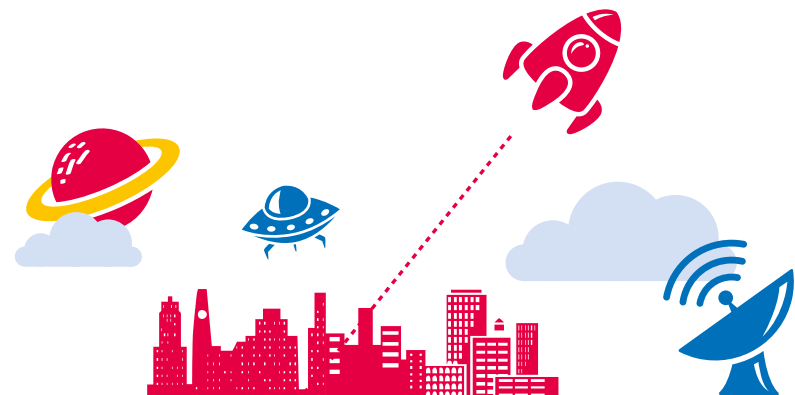
In order to get students excited about science, Google has shared its passion for outer space through an innovative contest.



In the YouTube Space Lab competition, 14 to 18 year-olds from around the world proposed science experiments for space. Teachers can access the Space Lab YouTube channel to access informative space-related videos.

Globally recognized partners who share our vision, such as Lenovo and Space Adventures in cooperation with NASA, JAXA, and ESA, helped us make YouTube Space Lab a reality.

A global panel of distinguished experts and scientists, including Professor Stephen Hawking, will help choose the winning experiments. The winning experiments will be carried out on the International Space Station and live streamed on YouTube—with the first broadcast to take place in 2012.



Support in Israel

Space Lab has taken off all over the world, from Australia to India to Venezuela. Israel in particular has attracted a number of interested students and organizations that have helped make the contest a success. Google worked with partner organizations, including the Ramon Foundation—named in honor of the late Ilan Ramon, Israel's first astronaut, who perished aboard the space shuttle Columbia. To support interested students, Google invited 60 teenagers to the Weizmann Institute of Science in Rehovot, Israel, one of the world's leading research institutions. Students were given access to Weizmann labs, mentors, and equipment so that they could form and explore project ideas with the most advanced scientific tools. At the end of the event, all the students made substantial progress with their projects, and four teams created and submitted their video on the spot with the help of a professional video team.

Learn more

Visit the YouTube Space Lab channel to find tons of informative and engaging videos about space and science, and to watch the experiments live from space!

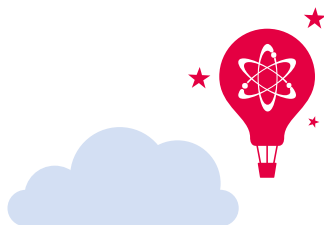
youtube.com/spacelab

SpaceLab launch video:

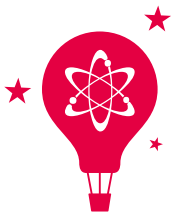
goo.gl/5vn2d



The International Space Station with ATV-2 and Endeavour. ESA:NASA.



Rewarding excellence in science, technology, engineering, and math



Through the **RISE** and **Trailblazer Awards**, Google supports students, and the organizations that work with them, to foster interest in science and engineering



[ROOTS IN SCIENCE & ENGINEERING]

RISE Awards

Google Roots in Science and Engineering (RISE) is an awards program that provides funding to innovative organizations working with primary, secondary, and university students in STEM enrichment programs. RISE is unique in that Google doesn't just provide the winners with funding, but works to make sure they become part of a community by sharing best practices among recipients.

RISE supports innovative nonprofit organizations in 125 countries, including the USA, Europe, the Middle East, Africa, and Canada. Awards range from \$10,000 to \$25,000 in the United States and Canada and €500 to €10,000 elsewhere. To date, Google has given more than \$1 million to organizations through RISE in the USA, Europe, the Middle East, and Africa.

Seventy-five organizations have been granted RISE awards over the past three years, including:

- USA & Canada: GUTS y Girls, Iridescent, Technology Access Foundation, American Indian Science & Engineering Society
- Europe: Grlbotics (Switzerland), IT Science Caravan Project (Romania), Women in Technology (Poland)



“RISE is a word that we like to toss around a lot here, and it's not just because we were the recipients of their generous grant. We're a team of high school students trying to build a robot, [and RISE allowed] us to buy the raw material needed for our aspiring engineers to step up and be brilliant; to rise above the commonplace to create something truly inspiring.”
- RISE Recipient



Trailblazer Awards

The Trailblazer Awards recognize students aged 16-19 who exhibit exceptional potential in science and engineering. Each year, 20 winners of competitions that take place in Germany, Hungary, Ireland, Romania, Switzerland, and the U.K. are honored for their work in national science, informatics, and engineering. Partnering with each of these competitions, Google engineers award “Trailblazer” status to the participants who have demonstrated an outstanding use of computing technology in their projects.



The 20 winners of the second annual European Google Trailblazer Awards at the winners event in Zurich, Switzerland.

The aim of this distinction is to encourage student achievement and to let talented young people experience life at Google so they can see what a career in computer science looks like—focusing specifically on how computer science touches every discipline.

In 2011, winners toured Google's Zurich office, met Googlers, and learned about topics such as data centers, security, and testing. They also worked together in groups to develop and pitch their own award-winning product.

Learn more.

To find out about RISE visit:
google.com/edu/rise
To find out about Trailblazer visit:
goo.gl/glx7q



Envisioning the future in a doodle

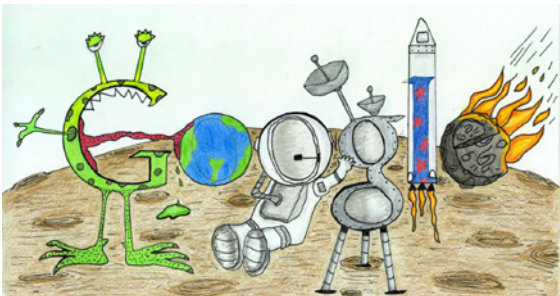
Doodle 4 Google invites primary and secondary students to use their artistic talents to think big and redesign Google’s homepage logo for millions to see

We believe kids that dream big about future possibilities will aspire to great things as adults. So in 2011 we invited US kids to tap their imaginations on the theme, “What I’d like to do someday...”. Whether finding a cure for cancer or taking a trip to the moon, it all started with art supplies and some 8.5 x 11 inch paper.

More than 107,000 students sent in submissions in 2011. One talented artist, second grader Matteo Lopez, took home a \$15,000 college scholarship and a \$25,000 technology grant for his school. In addition, his artwork appeared on the Google.com homepage. Stay tuned for news about Doodle 4 Google coming to other countries.

Learn more

The 2012 Doodle 4 Google competition opened in January. For information, go to:
google.com/doodle4google
2011 competition video:
goo.gl/aPx96



Space Life - Winner

What I'd like to do someday... "Is become an astronaut and explore space life. I want to wear a space suit, fly in space, walk on the moon and make friends with aliens in other planets."
Name: **Matteo Lopez** Age: **7**
City, State: South San Francisco, California



Feed The World - Finalist

What I'd like to do someday... "Is feed people all over the world. Since nearly a billion people worldwide are starving, I would like to see no one ever go hungry again."
Name: **Cassidy Brown** Age: **16**
City, State: Climax, North Carolina



Become A Graphic Designer - Finalist

"Seeing the new and innovative ways Google's design team displays the logo has inspired me as a young learner to express this year's theme by incorporating certain elements to convey my love of art. The pens and unique patterns are my fun, colorful representation of the world of graphic design."
Name: **Victoria Ta** Age: **14**
City, State: North Wales, Pennsylvania



The World Is My Canvas - Finalist

"The world is like a canvas where the people create the view. The more original the person is, the more captivating the image. I want to be an individual who inspires the personalities of people around the world. It would be amazing to do this through my art."
Name: **Hannah Ericsson** Age: **11**
City, State: Port Washington, New York

Making Magic in Higher Education

Programs, experiences & competitions for university students

Our commitment to higher education focuses on a variety of technology and engineering disciplines that we hope will stimulate interest in computer science—and in particular the rewarding field of open source development.

From Android Camp to software development internships, our programs offer university students opportunities for instruction, mentoring, and networking in a challenging learning environment that embraces all students, including those in historically underrepresented communities.

For more information on our work with university faculty and institutions see the next section of this booklet, Empowering Innovative Communities.



In this section, you'll find information on university programs, including:

Computer Science Programs

- Summer of Code
- Computer Science Summer Institute
- Android Camp
- Scholarships

Professional experiences

- Summer internships
- Ambassador program

Competitions

- Online Marketing Challenge
- Zeitgeist Young Minds

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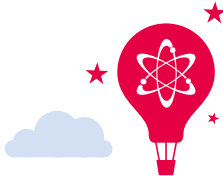
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Igniting the spark in computer science students



In order to build a large pipeline of people working in computer science, particularly among those who have been historically underrepresented in the field, we offer a series of programs and internships starting before and during university

Google Summer of Code

Google Summer of Code (GSoC), is a three-month program for university students that gives them a chance to work as part of an open source project, getting real-world development experience and honing their engineering skills. GSoC was recently called by a Director of the Free Software Foundation as “the single largest corporate philanthropic program in support of open source software, and a model to others.”

More than 5,000 students from 94 countries have participated since the program began in 2005.

During GSoC, Google acts as the “online matchmaker” between carefully selected open source projects and students 18+ (oldest student to date is 56) from a wide variety of academic disciplines. Once they are accepted to a project, students work online with their project-supplied mentor to define the project, set milestones, and carry it out.

GSoC is truly a global program. In 2011, we accepted 1,115 students from 68 countries, and mentors from 55 countries. Among the participants were 698 schools, ranging from local junior colleges and technical schools to leading global research universities.

Learn more

For more on Summer of Code, visit: code.google.com/soc
2011 overview video: goo.gl/juwAc



Google Summer of Code mentors at the Mentor Summit in October, 2011. Picture taken by Arthur Liu.

Computer Science Summer Institute

Google started the Computer Science Summer Institute (CSSI) as a way to encourage enrollment and retention of CS students, particularly those historically underrepresented in the field.

During CSSI, aspiring computer scientists come to Google headquarters in Mountain View, California for an all-expense-paid program that includes an interactive and collaborative CS curriculum, technical talks by Googlers, lectures by guests from the technology industry, and social and professional networking activities with other attendees. Students also enjoy a unique residential experience while immersing themselves in daily life at the Googleplex.

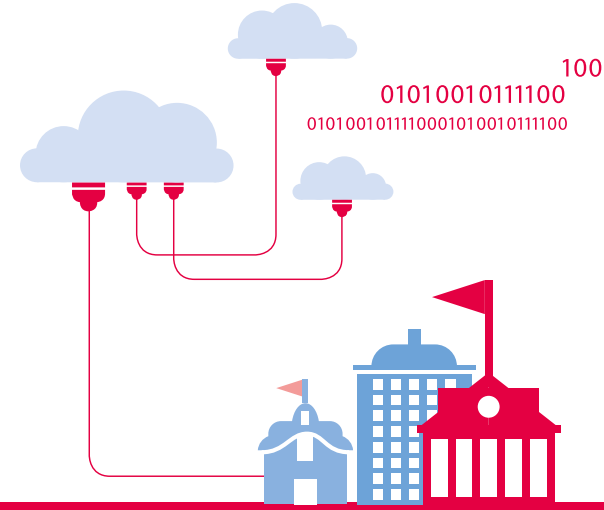


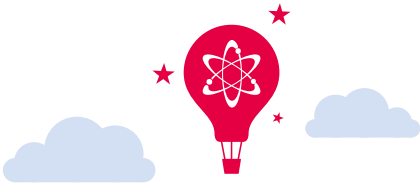
“CSSI uprooted my doubts in the impact of computer science, and replaced it with concrete evidence of the positive influence it has on society. It spurred me to always expand upon my current knowledge, and left me with a voracious hunger for innovative technology that can revolutionize the world.”

- Gabe Lew, CSSI 2011 participant

Learn more

For more on CSSI, visit: google.com/intl/en/jobs/cssi
CSSI 2011 photo gallery: goo.gl/dUSSY





Android Camp

Android is the world’s most popular mobile platform, powering phones, tablets, and other devices. In 2011, Google launched Android Camp, inviting 25 freshman and sophomore students to an all-expense-paid weeklong program at Google’s headquarters in Mountain View, California.

The camp offers an interactive and collaborative curriculum that is a practical introduction to developing applications for Android, as well as a skill-building session for developing, testing, and publishing software for the platform. Students also explore the concepts behind Android, meet alumni from their schools and other Google engineers, and get an inside look at the culture and work of Google.

Learn more

Find out more about Android Camp at:

google.com/jobs/students/androidcamp



Participants in the 2011 Android Camp at Google’s Mountain View, California office.



University students participating in Google summer programs.



Funding student scholarships

Google provides scholarships for students in engineering and computer science

By the end of 2011, Google had awarded more than \$8.8 million in scholarship money to upwards of 2,100 Google Scholars in fields such as engineering, computer science, and leadership. Most Google scholarships are more than just funding. Scholars (recipients) also have many opportunities to network, build skills, attend workshops, and further their professional development.

Here is a sampling of some of the scholarships we fund:

Anita Borg Memorial Scholarship

The Google Anita Borg Memorial Scholarship encourages women to excel in computing and technology and become active role models and leaders. The scholarship is named after Anita Borg, a leading computer researcher who founded the Anita Borg Institute for Women and Technology. It is awarded to female undergraduate and graduate students in Europe, the Middle East, Africa, the United States, and Canada studying computer science, computer engineering, or informatics. Winners receive a €7,000 scholarship and attend a conference at a European Google office to share ideas and experiences.

The finalist weekends include workshops and speakers, panels, breakout sessions, and social activities. They also provide an opportunity for scholars to get to know each other and share their experiences.

“For me, teaching is a great way of inspiring women in computer science, since they can see me lecturing and can see that a girl can do a PhD in computer science.”

- Melanie Ganz, 2010 winner, University of Copenhagen, Denmark

“This scholarship has truly made me more aware of my abilities as a woman and also more confident in my work and in voicing my ideas...it has taught me that with an idea that is voiced, one can build others to be better people, and that has given me the desire to encourage women to continue in this field.”

- Sinini Ncube, 2010 winner, Rhodes University, Grahamstown, South Africa



Other scholarships in computer science and engineering

Google partners with a number of organizations to provide scholarships for undergraduate and graduate students in CS and engineering. Recipients receive an academic scholarship and an invitation to attend the Annual Google Scholars’ Retreat in Mountain View, California. Some of the scholarships include:

- Google Hispanic College Fund Scholarship—Awarded to Hispanic students studying computer science or computer engineering in the USA.
- Google-UNCF Scholarship—Awarded annually to a group of African American students in the USA pursuing undergraduate and graduate degrees in computer science or computer engineering. These “last dollar” scholarships are based upon unmet financial need.
- Google-American Indian Science and Engineering Society—Awarded to AISES students currently pursuing undergraduate and graduate degrees in computer science or computer engineering in the USA.
- Google Lime Scholarship—Awarded to students with disabilities who are pursuing university degrees in the field of computer science in Canada and the US—in partnership with Lime Connect, a nonprofit that supports top talent with disabilities.



- Google Zawadi Africa Scholarship—Awarded to students in need who complete degrees in computer science, computer engineering, and/or ICT at top universities in Kenya and South Africa.

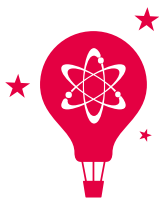
“Day three [of the Scholars’ Retreat] was highlighted by the scholars’ poster session. It was our time to shine and showcase our research. I saw very diverse projects within computer science and engineering, and this was another great chance to get to know each other’s passions in greater detail. Our feeling at the end of the retreat was unanimous: we had to stay in touch. Thus, we had a brainstorming session with scholars and organizers to find ways to stay connected as we are spread across the continent. The Google Scholars’ Retreat is an intelligent endeavour to bring technologically-driven students with various skills and expertise together.”

- Daisy Daivasagaya, 2011 Scholars’ Retreat attendee

Learn more
Asia Pacific scholarships video:
goo.gl/FbDqx



Building students' professional skills



Summer internships and Ambassador programs bridge the gap between study and hands-on professional experience

Internships

Google's internship programs span a wide breadth of disciplines, with opportunities in engineering and non-engineering fields (e.g. user experience, sales).

The Engineering Practicum is for students interested in computer science and engineering. Building Opportunities for Leadership Development (BOLD) internships benefit students in non-technical fields, particularly those who are underrepresented in the high-tech industry.

Google is invested in increasing the pipeline of future computer scientists and software developers, particularly among historically underrepresented students.

Engineering Practicum

Through the Engineering Practicum, college freshmen and sophomores majoring in computer science, undertake 10-week projects with a team of Googlers and other Engineering Practicum interns, in Boston, MA; Mountain View, CA; New York, NY; and Kirkland (Seattle), WA.

In 2011, we had more than 1,000 interns from 200 schools working at Google. These participants were often part of other summer programs, like Computer Science Summer Institute, so they are able to build from these foundations.



Google Student Ambassadors participating in team-building exercises.



BOLD internships



The Building Opportunities for Leadership Development (BOLD) internship program is a global initiative designed to provide exposure in the technology industry for students who are historically underrepresented in the field. Students complete 11-week paid internships in departments such as Sales and Operations, Finance, Marketing, and People Operations (Human Resources) and receive professional and personal development training. In 2011, Google had more than 280 BOLD interns across the globe.



Participants in the BOLD immersion program.

Ambassadors learn about the latest in Google technology, develop and run events on their campuses, and support Google programs and launches. Through this work they enhance their leadership, operations, marketing, and entrepreneurial skills. In 2011, 140 students in the United States earned a place in the Ambassador Program. Over the last year, the program also launched in Europe and the Asia Pacific region, with plans to spread to Sub-Saharan Africa and Latin America soon.

"I cannot remember any 10 weeks that have flown by as fast as the ones I just spent at Google. I was fortunate to work with the most diverse team I could have asked for. Because the five of us came from five countries and spoke more than eight languages combined, the variety of perspectives contributed to making the marketing project a success."

- Remo, 2011 Marketing intern, Dublin

Ambassador Program

The Google Ambassador Program allows university students around the world to develop real-world professional skills while bonding with peers. Ambassadors are nominated for roles that allow them to have a Google experience while attending university.

Learn more

For information about resources for students, including scholarships, internships, events, and programs, visit:

google.com/students

Video from a BOLD intern:

goo.gl/qTzw1

Video from an Engineering intern:

goo.gl/SBYWq



Supporting future leaders in all roles in technology

Google develops student potential in other areas of high-tech, through the **Online Marketing Challenge** and **Zeitgeist Young Minds**

Google offers resources and support in fields that benefit computer science indirectly, such as marketing and entrepreneurship.

Online Marketing Challenge

In the Online Marketing Challenge, professors of higher education register student teams to develop an online advertising strategy for a real business or nonprofit organization. Students are given a \$250 budget from Google. Entries are judged by a panel of marketing experts with backgrounds ranging from academia and research to philanthropy and impact investing.

Every year, more than 50,000 students from 100+ countries compete. The 2011 winner was a global team from the University of Houston, who created a campaign for the Houston Symphony. Teams working with nonprofits are also eligible to receive the Social Impact Award, with prizes that include donations of \$15,000 to the nonprofit partner.

In 2011, the Social Impact winner was a team from Vienna University of Economics and Business who created a campaign for TrashDesignManufaktur—a nonprofit that offers unemployed people the opportunity to transform electronic waste and discarded machines into high-quality design objects.

Learn more

Find out more about the challenge at:

google.com/onlinechallenge/index.html



Zeitgeist Young Minds

For the first time in 2011, Google convened a Young Minds competition, a showcase for 18 to 24 year-olds around the globe who are working to make a difference. Applicants were asked to submit a YouTube video explaining their work. Judges selected 12 winners to attend Google Zeitgeist conferences in the Americas and Europe and take their place as tomorrow's leaders alongside the greatest minds of today.

Zeitgeist is an annual conference in which hundreds of the world's leading thinkers come together to talk about the big issues affecting everyday lives. Past speakers have included Bill Clinton, Queen Rania of Jordan, and Stephen Hawking.

Winning projects ranged from educating immigrant girls in Canada to promoting Internet literacy for urban youth and preventing zoonotic diseases. Below are a few of the winners, whose videos you can watch online:

Ayna Agarwal - An avid entrepreneur, Ayna has advocated for collaborative public health initiatives and youth entrepreneurship since age 10. In 2007, she founded her own nonprofit, SPOT Globally, and has since worked with young people in 12 developing countries to help homeless animals and people to avoid hazardous health conditions.

Eric Berdinis - To aid the 284 million people around the world who are blind or visually impaired, Eric created high-tech alternatives to current low-tech solutions such as Seeing Eye dogs and walking canes. Together with a friend, he built a prototype belt that is equipped with an infrared camera, six vibration motors, processors, and batteries. When blind users wear the belt, they can feel vibrations across their stomachs and detect obstacles in their path.

Learn more

Get inspired by the amazing videos of the applicants at:

youtube.com/ZeitgeistYoungMinds



Eric Berdinis and Ayna Agarwal were two of the Young Minds recognized in 2011.

Supporting Google's local communities

We make education outreach in the communities where we have offices a top priority

We think it's important to support education in the areas where our employees and their families live and work. Google has more than 60 offices in 30 countries. The Google Community Affairs team coordinates local outreach and performs corporate citizenship activities in the communities where we have substantial offices and data centers. Our community efforts include four areas of focus:

- Supporting technology in education, with a particular focus on primary and secondary science and math education (STEM initiatives)
- Improving technology infrastructure for nonprofits, government, and small businesses
- Maintaining online safety and privacy
- Reducing carbon footprint and supporting green initiatives

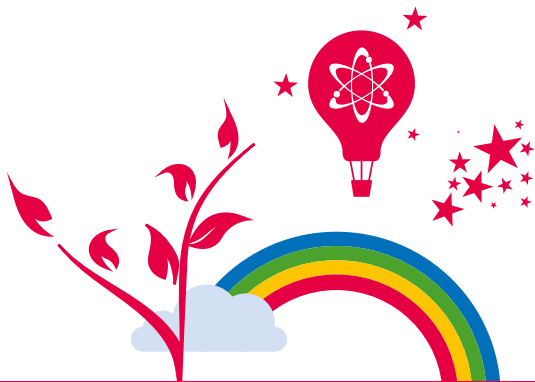
In deciding which community support to provide, the Community Affairs team matches Googler passions and skills with educational priorities. Examples include school visits to give guest lessons, outreach events such as contests for local students, and funding for local nonprofits and schools.

In the next few pages, you can read about the work we do to make learning magical for students near our Google offices. This includes:

- Outreach to local schools 37
- Example: Data Center outreach 38
- Example: Outreach in Japan 40



Students that have participated in Google programs.



Volunteering with local schools



Google brings its skills and passions to enhance learning at local schools

Googlers at every office around the world spend time with their local schools. Sometimes it takes the form of a specific event like a Career Day or guest lecture, but often we partner with national organizations to provide regular outreach. For example, during National Engineers Week in California, hundreds of Googlers across the country visited local classrooms, reaching thousands of students.

By bringing thousands of volunteers into schools each year, Citizen Schools promotes student achievement and re-imagines education in many communities.

Learn more



Visit this site to access some of the curriculum you can adapt for use in school (e.g. the guide for how to build your own robot):

citizenschools.org/apprenticeships/organization/google

"As a Googler and the proud parent of a child in the Mountain View Whisman School District, I'm thrilled about [the support we provide]. Mountain View has been a great home for Google, and we're pleased to be able to support our hometown."
- Roni Zeiger, Chief Health Strategist and parent

CITIZEN SCHOOLS Across the United States, we support and work year-round with area students via our partnership with the nonprofit Citizen Schools. Citizen Schools teams with middle schools to expand the learning day for children in low-income communities across the country.



Middle and high school students from 'iD Tech Camp' visit Google's campus for a day of computer science inspiration.



Sharing our love of engineering with students

Googlers bring their skills and passion to education outreach events in our **data center** communities

Google has numerous data centers around the world, from Oregon to Finland to Singapore. Data centers are specialized facilities filled with computers that run services such as Google Search, Gmail, and Google Maps. We're committed to playing a positive role in each of the communities where we operate. We're always on the lookout for opportunities for Googlers to share their expertise and time with local students.

Googlers at the Berkeley County, South Carolina data center realized a great way to match passions and skills with educational priorities was to hold a school event involving engineering. They decided on a trebuchet (medieval catapult) competition. Teams of Googlers and local high school students built trebuchets at The Citadel, the nearby Military College of South Carolina, and used them to launch objects into a pond.

The "Storming the Citadel" trebuchet competition sparked a number of similar hands-on community affairs activities in other data center communities. In the Dalles, Oregon region near the Columbia River Gorge, we held a large robotics competition. In Lenoir, North Carolina, we worked in partnership with Appalachian State University to run a soapbox derby race with high school physics students.

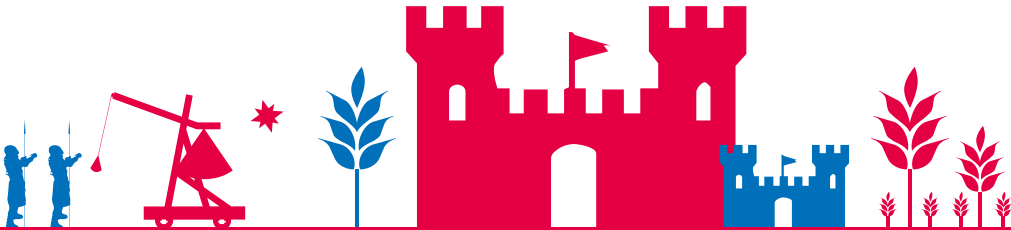
Learn more

Want to see the trebuchets in action? Check out this YouTube video:

goo.gl/sFpxs

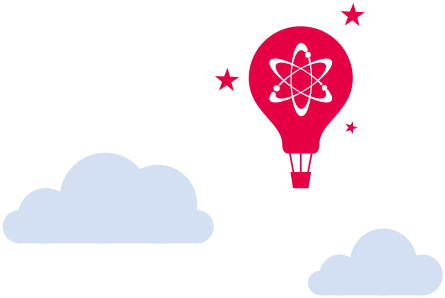
Inspire girls to do engineering with this video:

goo.gl/avUQQ



Left: Aaron Lee and fellow Citadel engineering student Ben Schwenk make modifications to their trebuchet.

Center & Right: Student teams test their trebuchets. Images by Joel Berlinghieri.



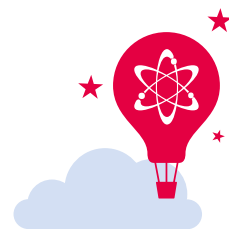
Learn more

To find out more about Google's data centers and with communities in the USA, Hong Kong, Finland, Belgium, and Singapore, visit:

google.com/about/datacenters/locations/index.html



Boosting the passion of Japanese women in computer science



The GLIDE initiative encourages women in Japan to pursue computer science

Around the world, Google offices develop programs tailored to the needs of their communities. One example is the Girls Leading in Development and Engineering (GLIDE) program in our Tokyo office.

The GLIDE community was launched with the mission of encouraging women in Japan to excel in computing and become active leaders in the field. The founders of GLIDE are women from all over Japan who work in computer science and have shown a deep passion for growing, promoting, and strengthening female leadership in engineering.

The participants at the kick-off event consisted of former Google interns and the Anita Borg Scholarship finalists from Japan.

Among the highlights was a welcome speech on the value of diversity by Google Japan's engineering site director, Joseph Ternasky. Other speakers included software engineer Kaori Fujiwara, who talked about her background in research and development, and Google engineer Kinuko Yasuda, who discussed her reasons for completing her PhD and offered advice to other female engineers thinking about continuing their education as Masters or PhD students.

Learn more

If you are interested in learning more about the GLIDE community, visit: goo.gl/4fSmm

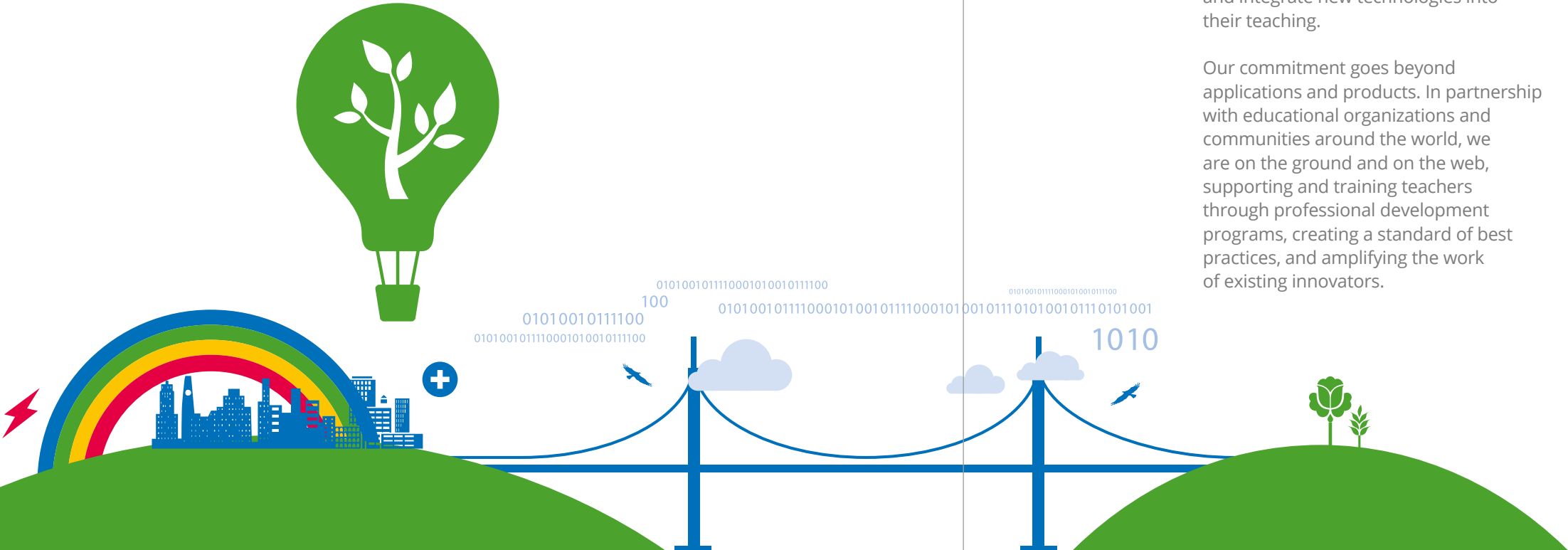


Above: Googlers and GLIDErs during the panel discussion.
Right: Founding GLIDErs at the kick-off event in Google's Tokyo office.



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Empowering Innovative Communities



Investing in educators, organizations, and established communities

We believe that behind every successful student is an exceptional educator, and that exceptional educators come from innovative and empowered communities. Because of this, Google makes investing in educational communities a top priority.

We work with teachers and organizations to provide resources, expertise, training, and tools that help them understand and integrate new technologies into their teaching.

Our commitment goes beyond applications and products. In partnership with educational organizations and communities around the world, we are on the ground and on the web, supporting and training teachers through professional development programs, creating a standard of best practices, and amplifying the work of existing innovators.

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Empowering Primary & Secondary Educators

Training and resources for teachers who make a difference with technology

The most important factors in driving student learning are a great teacher in every classroom and a great leader in every school. Research shows this is particularly the case in mathematics and science.

Many teachers are doing groundbreaking work using technology to inspire a love of learning and help their students be successful in the 21st century. But with increasingly limited resources, innovative teachers aren't always given the time or opportunity they need to see their ideas brought to life and shared with others.

We help primary and secondary educators connect and share with colleagues—to bring their ideas to a larger audience. The contents of this section are:

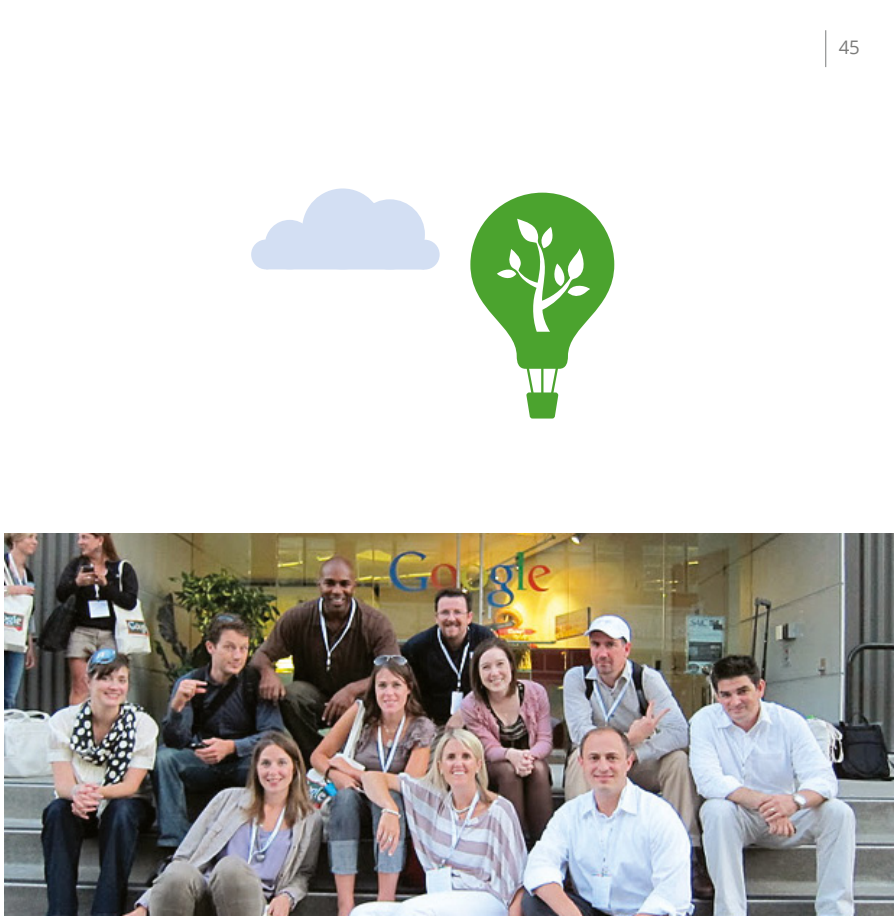
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Doodle: A Google doodle on September 10, 2005, honored Teachers Day in China.



Doodle: A Google Doodle on November 20, 2009, honored Teachers Day in Vietnam.




Photos: Participants and instructors at the Google Teacher Academy in Seattle, July 2011.



Supporting professional development for computer science teachers

The **Computer Science for High Schools (CS4HS)** program enables universities to offer workshops and resources to local secondary school teachers

 CS4HS is an initiative sponsored by Google to promote Computer Science (CS) and computational thinking in secondary school curriculum. With a grant from Google's Education Group, universities develop 2-3 day workshops for local computer science teachers. Since its inception in 2009, the program has grown sevenfold. We estimate that the 2011 CS4HS workshops trained more than 2,400 teachers around the world, including more than 1,200 in the United States.



The teachers trained at the University of Alabama CS4HS workshop.

Workshops incorporate informational talks by industry leaders and discussions on new and emerging CS curricula at the secondary level. We currently offer CS4HS grants in the USA, Canada, Europe, the Middle East, and Africa.

Examples of CS4HS initiatives include:

- Carnegie Mellon University Workshops (USA)—The Pennsylvania university gave a training workshop that allowed participants to explore real-world examples of computation in action, including new tools for teaching students the principles of program development and computational thinking.
- Animation 11 Festival and Inspiration Computer Science Day (UK)—Hosted by the University of Manchester in the UK, the two events were designed to excite teachers about computer science by using original computer animation. The university also created an online Animation Bank, with web resources for teachers and students.



- National Computer Teachers Conference (Kenya)—Hosted by Strathmore University, the conference equipped 90 teachers and 15 principals/head teachers with practical skills to improve teaching, and created a forum to exchange ideas and best teaching practices.
- Roberta Robotics Program (Switzerland)—At Ecole Polytechnique Federale de Lausanne, the program used robotics to help inspire teachers of girls ages 10-17.

Learn more

Find out how to apply for a CS4HS grant, get workshop attendee and partner information, and learn about other helpful resources at:

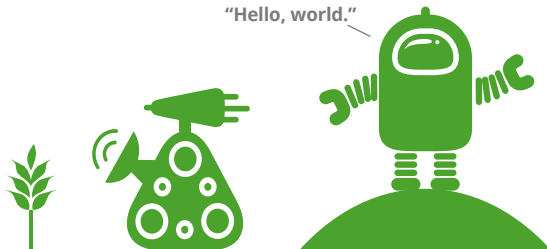
cs4hs.com



“There is a widely-held belief in the UK that schools are actually turning kids off to computer science by emphasizing the use of computers for office functions. The animation competition (we run) brings creative computer use into the classroom and exposes students to aspects of computer science such as file formats, music encoding, and video technology”
- Participant in the Animation 11 Festival



A participant at a CS4HS session at University of Alabama.



Developing educational communities through live training

Google invites innovative educators to apply for free trainings, like the **Google Teacher Academy & Geo Teachers Institute**

Google works to develop online resources and tools that help millions of educators at a time. But we also recognize the value of getting educators together for face-to-face professional development—not only for the benefit it provides during the sessions, but because it forms the foundation of a lasting community.

Educators who have attended our in-person training, share resources, challenges, and ideas for months and years after the sessions are over. Here's a sampling of some of these programs:

Google Teacher Academy

The Google Teacher Academy (GTA) is a free professional development experience designed to help primary and secondary educators around the world get the most from innovative technologies. An intensive two-day event, the GTA gives participants hands-on experience with Google's free products and other technologies.

Prior alumni of the program teach their peers about innovative instructional strategies and offer resources to share with colleagues, all while immersing themselves in Google's office environment.

To date, Google has held 13 Google Teacher Academies around the world. For each session, 50 educators are selected, including classroom teachers, curriculum specialists, and technology experts who serve the worlds' primary and secondary teachers and students. There are now more than 600 Google Certified Teachers—all alumni of the program.



Geo Teachers Institute

The Geo Teachers Institute is a free professional development program designed to train educators to get the most from Google's Geo technologies. In 2011, Google partnered with the National Geographic Society and the University of Southern Maine Lewiston-Auburn College to host two Geo Institutes, in Washington, D.C. and Maine, respectively. At these training sessions, participants learned how to use Google Earth & SketchUp, but more importantly how to deploy them to inspire students.

The 2011 sessions were attended by about 150 primary and secondary educators and taught by Google, and its partners. Both teachers and professors helped to lead the training, so that peers could learn from peers. One instructor even brought five of his secondary students to act as tutors!

Learn more

Visit our education website, click on 'for teachers' and go to the section on professional development.

google.com/edu

GTA Washington, DC video: goo.gl/DtwU4

GEO Teachers Institute video: goo.gl/aCava



Top: Participants at the Computer Teachers Conference in Kenya.
Center: Participants at the Google Teacher Academy in Sydney, Australia.
Bottom: History teacher Mike Hathorn of Hartford, Vermont helped teach his peers at the 2011 Geo Teachers Institute in Lewiston, Maine.

Creating online teaching resources

Google creates webinars, lesson plans, and curricula to make **online tools** easy to deploy in the classroom

Google creates resources that educators can use to teach important skills, such as research, computational thinking, and coding. We put these resources online so they can reach the largest possible audience. Below are many of the resources available from Google. Additionally, the google.com/edu website offers lesson plans and videos from other teachers that utilize tools such as Google Apps, Earth, and SketchUp.

Search Education

Experience shows us that many students are never taught how to search online. This means they do not know how to use some of the tools, and fall behind their peers.

Search lets you find the information you need, when you need it. Students need to know how a simple search works. And for more specialized questions, a bit of instruction on how to search can improve results. Our Search Tools for Educators have evolved in the past year with more and higher quality sources than ever before.

Whether they support elementary school students or trained professionals, educators can use our website to create lesson plans, presentations, and audit numerous recorded and live webinars for teaching all levels of search.

Learn more

Visit the Google Search Education Evangelism website for more lesson materials, webinars, and groups.
sites.google.com/site/gwebsearcheducation
Search skills presentation video:
goo.gl/wywxjd



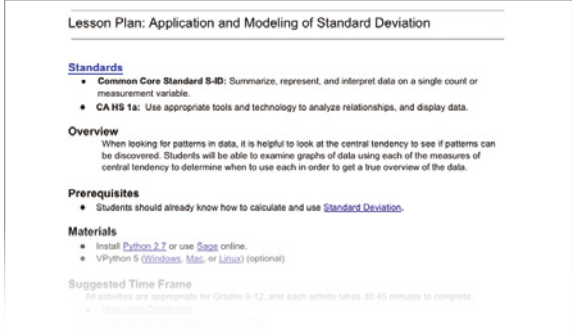
Exploring Computational Thinking

Google is committed to promoting Computational Thinking (CT) throughout the primary and secondary curriculum. CT uses problem-solving skills and techniques such as pattern recognition and algorithm design to help software engineers write programs that underlie the applications we use such as search, email, and maps. The building blocks of these higher level skills are basics like multiplying fractions and using surveys.

Google's Exploring Computational Thinking website contains many lessons in Computational Thinking, as well as links to more than 30 external resources, discussion groups, and video lessons and tutorials.

Learn more

Access the computational thinking resources at:
google.com/edu/ect



Top: 'Using Google Sites' webinar presentation.
Center: Advanced Search Squad lesson presentation.
Bottom: Lesson Plan - Application and Modelling of Standard Deviation.

Bringing literature to life in three dimensions



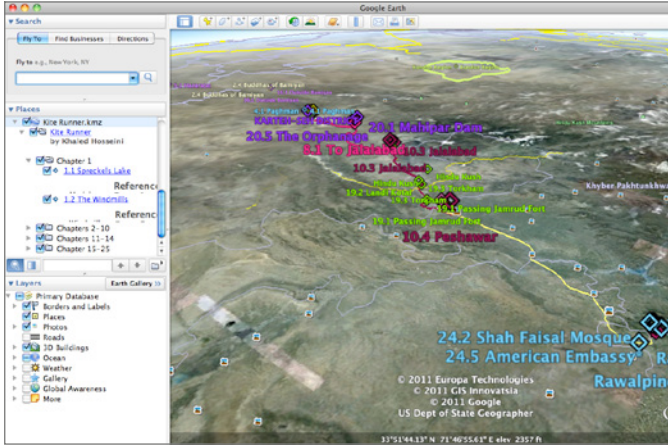
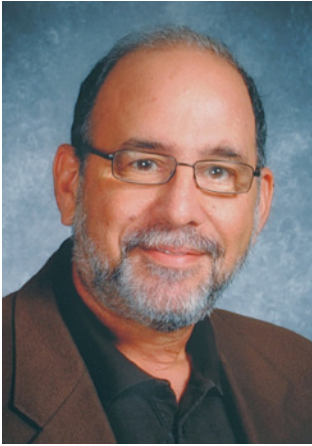
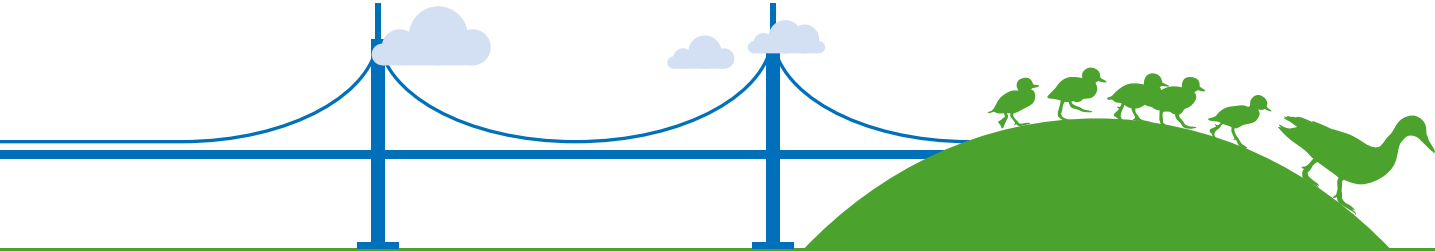
Google Lit Trips help readers go “inside the story” to travel virtually alongside characters

In classrooms all around the world, teachers are dreaming up ways to use Google tools to improve their teaching and engage their students more deeply. One teacher who has done just that is Jerome Burg, creator of Google Lit Trips.

Google Lit Trips are free downloadable files that map the journeys of characters from famous works of literature onto the surface of Google Earth. At each location along the journey, there are placemarks with pop-up windows containing a variety of resources including relevant media, thought provoking discussion starters, and links to supplementary information. Lit Trips allow students to feel as if they are looking through the windshield of that old jalopy in *The Grapes of Wrath* or waddling alongside Mr. and Mrs. Mallard's duckling family in *Make Way for Ducklings*.

Jerome conceived of Google Lit Trips in 2007 as a way to honor a teacher who had made a huge impact on his life.

“The Google Lit Trips project is simply my personal act of kindness in gratitude for the life-changing experience I had in my senior English teacher, Mr. Ferdie Kay’s class. We’ve probably all had a teacher like Mr. Kay. He had a way of reaching our minds through our hearts. He knew how to build bridges between where we were and where he was confident we could go via the wisdom of great literature.”



Left: Google Lit Trips website homepage.
Center: Jerome Burg, Creator of Google Lit Trips.
Right: A screenshot from the Google Lit Trip for the popular book, *The Kite Runner* by Khaled Hosseini.

The project has had much success. Today Jerome supports educators through Google Lit Trips, giving workshops, and contributing to the professional dialogue by bringing his innovation to educational communities around the world.

Learn more



Visit googlelitrrips.org today to download literary trips for popular primary, secondary, and higher education books. You will need to install Google Earth by visiting earth.google.com



Connecting with innovators at large education events

Google goes around the world to meet with innovators in the education community at large education events

In addition to organizing Google education sessions, we connect with educators, students, and nonprofits around the world at education conferences and events. The support we give at these events includes speaking, funding, serving as judges, setting up technology lounges, hosting booths, and giving on-site training. In 2011, we attended more than 65 major education events worldwide, reaching approximately 150,000 people and contributing hundreds of thousands of dollars in sponsorships. More than 200 Googlers participated. Some examples are below:

Primary and secondary events

- International Society for Technology Education (ISTE), June 2011—At our 5th ISTE conference, about 25% of the more than 15,000 primary and secondary educators at the conference stopped at the Google booth. In our teaching theater we did workshops on everything from Apps for Education to computational thinking and Search education.

- BT Young Scientist in Ireland, January, 2011—More than 30 Googlers from our Dublin office volunteered at the three-day event, which reached 38,000 students. We conducted demonstrations and talked with students about pursuing studies in technology.
- National Science Teachers Association, March, 2011—More than 14,000 science teachers across the USA attended this event, the largest annual science teacher gathering in the country. In addition to sponsoring part of the event, we hosted sessions on how to make science magical.
- BETT Show, January, 2012—One of the world's largest conferences for education and technology. We participated in this event for the first time in 2012.



Higher Education events

- Special Interest Group on Computer Science Education (SIGCSE), March, 2011—In addition to sponsoring the event, we connected with 1,300 computer science (CS) secondary and higher education teachers and delivered two sessions on CS education.
- EduCause Annual Conference in Philadelphia, October, 2011—We were a Platinum Sponsor for this event, which included more than 5,000 university professors and Chief Information and Technology Officers.
- Grace Hopper Celebration of Women in Computing, November, 2011—We have supported this gathering of 4,000+ female CS students and professionals since its inception. More than 70 Googlers attended the most recent conference and we supported the event by contributing keynote speakers, panelists, and funding for CS high school teacher training.



Images from the Educause, ISTE & BETT conferences.

Empowering innovators in higher education



Google helps university educators to create new approaches to teaching and learning

Google started out as the graduate school research project of our founders, Larry Page and Sergey Brin, while they were working toward PhDs at Stanford University. Since those humble beginnings, we've benefited tremendously from research collaborations and we've continued to maintain strong relations with leading universities worldwide.

In this section we highlight some of our higher education work across the areas of curriculum, professional development, and funding for higher education researchers and practitioners. This section includes:

- Curriculum: Google Code University & Stanford Artificial Intelligence class 57
- Google Faculty Institute 58
- Faculty support: Google Research Awards, Google Fellowship Program, Visiting Faculty 60



Participants at the Europe, Middle East and Africa (EMEA) Google Faculty Summit, 2011 (photo: Dawid Kuroczko).



Providing higher education curriculum for real-world application

We support greater access to high-quality curriculum and instruction through new technologies and free resources

Google Code University

Google Code University (GCU) is a website that provides sample course content and tutorials for CS students and educators. GCU started a few years ago when Google was developing internal training for its staff. Realizing that these resources would be valuable beyond Google, we decided to make the materials available to people outside the company.

GCU does not require registration and materials are free. All the courses fall under the Creative Commons license, which means they are sharable, so educators can adapt them easily to their own classes. The site includes tutorials and introductions that have few or no prerequisites, courses on advanced topics, recorded video lectures and talks, and exercises. Example classes include 'Google's Python Class' and 'Javascript from the Ground Up.'

Stanford University AI Class

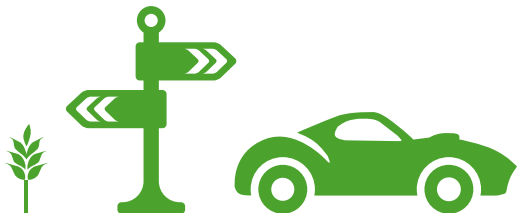
A bold experiment in distributed education, the Stanford University class, "Introduction to Artificial Intelligence," was offered online to students worldwide from October 10–December 18, 2011 at no charge.

Taught by Sebastian Thrun and Peter Norvig, two Directors of Research at Google, the curriculum drew from Stanford's introductory Artificial Intelligence course. Artificial Intelligence is the science of building machines that do the right thing in complex, uncertain environments. Robots, Google Goggles, self-driving cars, even software that suggests music you might like to hear are all examples of AI.

Out of the 160,000 students who registered for the course, more than 20,000 completed all the requirements. This class has inspired others to do similar open, online courses.

Learn more

Learn more about computer science and how to teach it at:
code.google.com/edu



Offering professional development to help the teachers of tomorrow

The **Google Faculty Institute** aims to improve the teaching of technology in teacher preparation programs

In order to adapt classrooms for the 21st century, teachers need to know how to use technology effectively. To help tackle this issue, we hosted the inaugural Google Faculty Institute in Mountain View, California in August 2011. The purpose of the three-day institute was to ensure that teachers' teachers have the support they need to help them adjust to a changing technology landscape.

The 39 faculty members hailed from 19 California State Universities (CSU), as well as Stanford and UC Berkeley. They were joined by secondary educators who teach STEM. CSU programs credential 60 percent of California's teachers—or 10 percent of all USA primary and secondary teachers—and one CSU campus alone can credential around 1,000 new teachers in a year.

The Institute featured keynote addresses from respected professors, case studies from distinguished secondary teachers from across California, hands-on technology workshops, and panels with professionals in the tech-education industry. On the last day of the Institute, faculty members submitted grant proposals to scale best practices outside of the meeting. All of the proposals were funded by Google and are now in progress.

Learn more

Read more about the Google Faculty Institute at:

goo.gl/tqYZU



The participants of the inaugural Google Faculty Institute.

Enhancing faculty research to improve education

Google offers awards and programs to support innovation among education faculty

Google has created a number of programs that empower university faculty and researchers who prepare the teachers and leaders of tomorrow. Our awards are made in areas in which we believe further research needs to be done, such as primary and secondary education.

Google Research Awards program

This program aims to identify and support world-class full-time faculty pursuing innovative research in areas relevant to Google's mission. We encourage award recipients to participate in Google's own academic environment by giving talks, engaging in discussions with our researchers, and sharing ideas and insights.

Google Fellowship program

Through this work we recognize and support graduate students doing exceptional work in computer science. In 2012, this highly competitive program will award approximately 12 unique fellowships in categories such as speech technology, machine learning and computer security—technologies that change the world.



Top: Participants at the National Academy of Engineering's US "Frontiers of Engineering" Program, hosted by Google.
Bottom: Participants get a preview of the Web-Gl Digital Bookcase, A Chrome Experiment.

Visiting Faculty program

This program enables leading academics to work at Google for periods of 6-12 months and take advantage of our challenging research problems, our wealth of data, our computing infrastructure, and the ability to deploy research in a forum that will be used by millions of people.

Frank Stajano, Ph.D., was one of Google's Visiting Faculty. Frank is a senior lecturer at the University of Cambridge, UK. His research interests revolve primarily around three interconnected themes: systems security, privacy in the electronic society, and ubiquitous computing. He is especially interested in the human aspects of security and privacy. He explains the benefits of his experience:

"I like to work on practical problems that have a connection with the real world. Even after I returned to university full-time, I still maintained connections with industry, mainly through consultancy jobs. I feel this helps keep my research honest, as it makes me work on problems that have practical relevance."

Learn more
Inaugural HBCU Faculty Summit video:
goo.gl/X4UcM



Presenter at the EMEA Google Faculty Summit, 2011 (photo: Dawid Kuroczko).

Empowering communities

Google offers funding and partnership to nonprofit organizations and academic institutions around the world

We contribute funding at a global level both through the company and Google.org, the philanthropic arm of Google. We also give locally, supporting those working in Google communities. The pages that follow contain some examples of global and regional giving.

In 2011, Google gave more than \$48 million in grants to nonprofit education institutions, with a large portion going toward STEM. Our support included Google.org funding for 15 highly effective STEM programs, including Boston-based Citizen Schools and the D.C. Public Education Fund (both 100Kin10 partners), Generating Genius in the U.K. and Teach for All in over 20 countries worldwide. These organizations enrich the learning experiences of underserved youth. In total, these grants will provide enhanced STEM education for more than 3 million students.

Additionally, we supported girls' education in the developing world. Google believes that by educating girls, we not only improve the opportunities of the individual, but those of their whole families.

The African Leadership Academy provides merit scholarships to promising young women across the continent, and the Afghan Institute of Learning offers literacy classes to women and girls in rural Afghanistan. Groups like these will use our funds to educate more than 10,000 girls in developing countries.

In this section you can read about some of the organizations and communities we support:

• Nonprofits around the world	63
• 100Kin10 and Teach for America (USA)	64
• Khan Academy (Global)	66
• G-funze program (Kenya)	67
• Nonprofits (UK)	68



Students at the St Martin in the Fields School for Girls in London, UK, who are participants in the Generating Genius program, which received funding from Google.

Learn more

Video on giving to girls' education:
goo.gl/Hh0gZ



Nonprofits around the world



We boost the work of local nonprofits

Google provides funding locally to organizations in the 60 locations where we have offices. Our community outreach efforts have four areas of focus, two of which are in education: Supporting technology in education, with a particular focus on primary and secondary STEM education; and improving technology infrastructure for nonprofits, government, and small businesses.

Some examples of nonprofit giving in 2011:

- Howard University, Washington D.C.—We provided funding to the Howard University Engineering Middle School for an on-site hands-on engineering lab.
- Mountain View Whisman School District, California—We gave a \$1 million grant to the district for enhancing science and technology education.
- Los Altos High Schools, California—We awarded a \$250,000 grant and 200 computers.
- Austin, Texas—We provide funding to KIPP Austin and the Austin STEM School to support science and technology education.
- Oklahoma—We awarded \$24,000 to Chateau public schools and \$20,000 to Prior schools to build Mobile Labs.
- Oregon—A whopping 603 people from a town of 12,000 came out to support and encourage the local high school robotics team competition we ran in the Dalles. This community is home to Google's first-ever in-house-created USA data center.
- New York—We held sessions for hundreds of students from the Harlem Children's Zone summer program, during which we spoke about college, careers and digital safety.
- Israel—Our Google Israeli office supports a number of local outreach efforts including the Mind the (Gender) Gap program, which encourages female high school students to study computer science.
- Japan—In addition to the GLIDE program (described on page 40), the Tokyo office gives money to education groups such as Supercon and PC Koshien, and also offers scholarships and funding.

Supporting nonprofit organizations in the United States

Through funding & partnership, Google magnifies the efforts of national nonprofit organizations such as 100Kin10 and Teach for America

We provide funds to nonprofit organizations around the country to help amplify their impact and scale the important work they are doing. Two prime examples of these partnerships are the 100Kin10 initiative and Teach for America.



This year, Google joined 100Kin10 (100Kin10.org) as a founding member. 100Kin10 is a collaborative movement created in response to the United States' need for 100,000 new, highly qualified STEM teachers over the next 10 years. Google recognizes the critical importance of STEM teachers in ensuring that every child has access to an excellent education. As of the end of 2011, almost 100 member organizations have made commitments to 100Kin10. Our part in this effort includes partnering with the Broad Institute to build a blueprint for a recognition program for the top 5% of STEM teachers nationwide, and sharing talent management practices to help find, grow, and retain outstanding STEM teachers. 100Kin10.org

TEACHFORAMERICA

While Google supports nonprofits through the RISE Awards and community grants, we also have a few key national nonprofit partnerships, including Teach for America (TFA). In addition to money (we awarded TFA \$1 million in 2010), Google consults with TFA on their People Operations strategy, funds their social innovation and entrepreneurship initiatives, and hosts events such as the education technology workshop for 200 teachers held at the 20th Anniversary Summit.

We also offer a deferral program so that students who are accepted to both TFA and Google are allowed to defer Google for two years to complete their teaching commitment. teachforamerica.org



Left & Center: Teach for America teachers and some of their students. Right: Chancellor of the Washington DC Public Schools, Kaya Henderson, addressing the 10,000+ crowd at the Teach for America 20th Anniversary Summit, February 2011.



“Thank you so very much for such a significant pledge, so early on in our history. Your commitment and belief in our efforts is an absolutely huge boost.”
- Wendy Kopp, Founder and CEO, Teach for America and Teach for All

Learn more
US organizations can apply for the Google for Nonprofits program and get access to exclusive products and resources to help expand impact. google.com/nonprofits

Video testimonials: goo.gl/PkWns

Making a world-class education accessible to everyone around the world

Google supports the **Khan Academy**, a nonprofit organization whose goal is to provide a free education to anyone who wants it



The Khan Academy is an innovative nonprofit conceived by former hedge fund manager Sal Khan in 2004 as a way to tutor his cousin remotely. Khan quickly realized his teaching skills could help many people, and he began sharing his lessons via YouTube for free.

By the end of 2011, the Khan Academy had a library of 3,000+ videos and 250+ practice exercises with a whopping 4,000,000 unique users per month. Thousands of classrooms are currently using Khan Academy within the school day. Teachers use the Khan Academy dashboard for goal setting and to track student progress in the lessons.

Google supports Khan in a number of ways. Khan Academy uses Google Apps for Nonprofits for its email and collaboration, and continues to use YouTube as its platform for sharing videos. Google also awarded the Khan Academy a \$2 million prize at a key stage in its development.

“This Google Award really allows us to take this to the next level,” explained Khan. “We’ll be able to build out a team and internationalize the content so we start addressing the other 5 billion people in the world.”

Learn more

To watch Khan Academy lessons or learn more about bringing the program to your classroom, visit :

khanacademy.org



Students in San Francisco doing Khan Academy lessons.

Training Kenya’s teachers to harness the power of Google



The **G-funze program** in Kenya provides hands-on technology training for educators who reach millions of students

In 2011, Google launched G-funze, an education initiative in Kenya. Literally meaning “to learn,” G-funze teaches secondary school teachers how to use Google tools to enhance learning in their classrooms.

At the inaugural event, Google held an all-day teacher workshop in Nairobi, drawing teachers from 500 schools across the country. The workshop focused on three tools: Google Search, Google Apps and Google Earth.



Group photo of the participants in the G-funze program.

Teachers were inspired to introduce innovative teaching strategies in their classroom as they forged relationships with their counterparts from other schools.

Through an online discussion forum, e-training, and other methods, participants were encouraged to stay connected to the G-funze community. Google was later invited to train Kenya’s curriculum developers in the core content of the workshop, which will reach more than 10 million students across Kenya.



Partnering to inspire students in the United Kingdom

Google teams up with a number of organizations that across the UK are working to make learning magical

One of Google's largest offices is in London, England. As part of our continuing commitment to support the local communities where we operate, we collaborate with many organizations in the UK doing great work with students.

Generating Genius
generatinggenius.org.uk

Generating Genius works with education and industry to encourage, guide and inspire gifted and talented young people from underrepresented groups to pursue STEM studies and careers. Each year, Generating Genius selects 40 London school children from underprivileged backgrounds to enroll in the exclusive program and develop the technology skills needed to apply for the very best computer science schools. Google supports this organization financially and also volunteers its engineers as mentors and role models.

Google's funding in 2011 enabled Generating Genius to open up its program to include girls, as well as increase the amount of computer science taught in its summer schools and weekend workshops.

Teach First
teachfirst.org.uk

Google is a supporter of Teach First, a nonprofit organization which addresses educational disadvantage by transforming exceptional graduates into effective, inspirational teachers and leaders in all fields.



London Science Museum
sciencemuseum.org.uk

Google provides financial support for a number of science museums around the world, including the London Science Museum. A recent Google blog announcing the donations summed up why we do it: "Museums do more than entertain and teach... Many Googlers cite their own experiences in science museums as a positive influence on their decision to become engineers. By transforming the curious learners of today into the innovators of tomorrow, museums perpetuate both creativity and accomplishment."



Learn more
STEM education giving video:
goo.gl/1FDKi



International Mathematical Olympiad
imo-official.org

The International Mathematical Olympiad (IMO) is the world championship of secondary school mathematics, designed to test ingenuity and insight and tax the sharpest minds in the world. Held each July at a different location, the 2011 IMO was in the Netherlands, and an IMO Foundation was set up in that country to administer donations to future IMOs. Google has given the organization €1 million to support the next five IMOs.



Director of Generating Genius Tony Sewell (center) and two students who have completed five years in the program and are now headed to elite universities to study computer science and physics.

Building a foundation of Technology and Access



Equipping teachers and learners with the technology they need

We believe that collaboration in learning is essential to the 21st century classroom, and that technology can make collaboration happen more easily, for many more people, in a meaningful way.

The Internet, personal computers, and technological innovations have fundamentally changed the way people live, work and learn, but the impact of these new technologies is not always reflected in schools and systems.

Google supports innovation in education systemically and at scale with content, coursework, and tools that are open, accessible, easily customized, and affordable to learners at all levels—so that students and teachers can find the information they need, when and where they need it, and use it safely and effectively.

This section contains information on the following technologies:

Hardware	
• Chromebooks	72
Find, Create & Share	
• Search	74
• Research & Google Scholar	76
• Google Books	78
• Google Earth	80
• Google SketchUp	82
• YouTube	84
• Digital literacy	86
Communicate & Collaborate	
• Google Apps for Education	87
• Google+	90

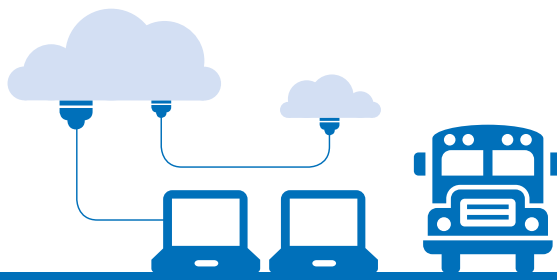

Bringing the power of the web to classrooms

Chromebooks are fast, intuitive and easy-to-manage—bringing the power of the web to more students than ever before

In May 2011, Google introduced Chromebooks—computers optimized for all of the rich resources and tools available on the web. Chromebooks extend the benefits of cloud computing, from cutting-edge innovation to real-time collaboration, to every classroom desk, while avoiding the hassles associated with traditional PCs and tablets.


As a result, teachers spend more time teaching and less time managing classroom technology. And since the Chrome Operating System takes care of itself and the web-based Management Console eliminates the need for individualized setup and maintenance, Chromebooks for Education help schools put the Web into the hands of more students and teachers.

Learn more
Visit the Chromebooks website:
goo.gl/ZLUFD
Chromebooks overview video:
goo.gl/ou3VX



"We essentially give the Chromebook boxes to the students and within 20 minutes we have students, from fourth grade to high school, who are on the Internet actually already responding to blog posts and writing and publishing within one class period. I've never seen that before in my life."

- Rachel Wenthe-Chaney, CIO, Oregon High Desert Education Service District




Jared Hamilton, technology coordinator at Montgomery School in Pennsylvania, received 40 Chromebooks for his middle schoolers, ages 11-14. As he sees it, "Chromebooks are perfect for this age group because they spend most of their time on the web." The students gravitated toward Chromebooks from the start because they found that they could get more done in less time, and turning in assignments to their teachers was easier. "Once they start using the Chromebook, they don't want to go back," Hamilton says.



Not only do teachers who use the Chromebooks cite improvements in student engagement and learning, but also in their own excitement for teaching.

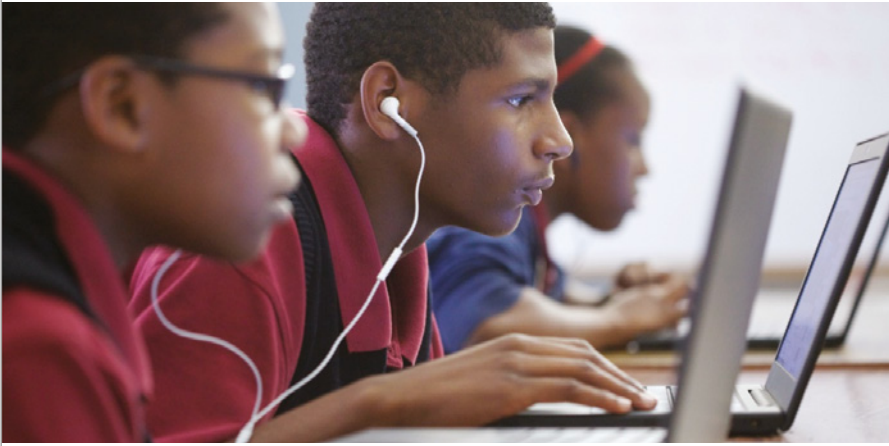

"Of all of the benefits that I have seen, I think student engagement is the biggest. I see students who would not pick up a pencil or paper, who are now completing assignments and doing fairly well. Students have a sense of independence through the use of the Chromebooks. Recently, the students were working on an extension project from the book they were reading and every student in the class was actively engaged with the Chromebooks."

- Aaron Slutsky, Director of Technology, North Carolina



"This is my 15th year of teaching... and the Chromebooks have made me get up every day with more excitement than ever!!! After only a week and a half, I can only imagine what doing this for a year will mean for my kids and me."

- Keri Radcliffe, 4th Grade Teacher



Left: Students at the KIPP Academy of Opportunity middle school in Los Angeles, California using Chromebooks in their history class.



Right: Students at Grace Lutheran School in Oshkosh, Wisconsin using Chromebooks.

Google

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Custom range...

All results

Sites with images

Related searches

Visited pages

Not yet visited

Dictionary

Reading level

Social

Nearby

Translated foreign pages

Verbatim

Fewer search tools

Unlocking the power of Search

Search has become even more essential to teaching and learning

When most people think of Google they think of Search. It's at the core of everything we do, and the technology has fundamentally changed the way we live and learn. Search is constantly improving, with dozens of new innovations made every month. Last year saw incredible leaps in Search, both in terms of product development and educator tools that support people in learning search.

When you search on Google, you now find a revised left toolbar that includes the category at the bottom entitled, "More search tools." Clicking this link unlocks powerful tools for teachers and learners.

Translated foreign pages

Want to learn how people in another country view events? The translated foreign page feature lets you search for and view pages from other languages and countries, immediately translated into your language. This is a great tool for English and history classes, particularly lessons on points of view, bias, and the media.



Reading level

Looking for pages that are written at a more basic level? Reading level filters results based on difficulty. If you choose to "annotate results with reading levels," you'll start seeing a handy bar graph showing the range of content for a particular topic at the top of the results page.

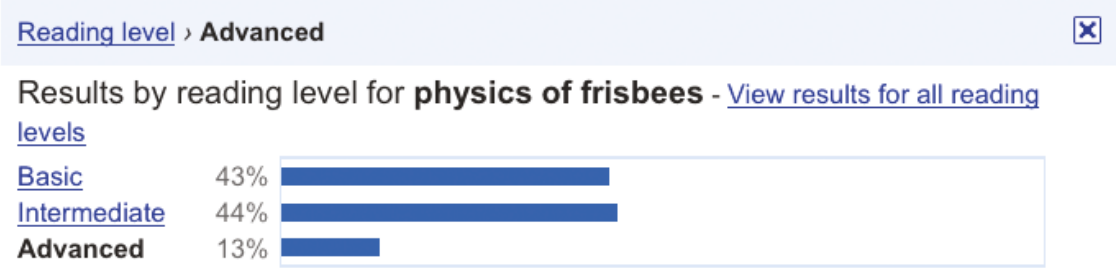
This way, whether looking for a basic explanation of the 'physics of frisbees', for a first science fair project, or designing radical new saucers as part of a college aerospace class, Google can help everyone find the right results.

Time range

Looking for the most current results about a news story? The time ranges tool lets searchers select the past 24 hours, week, month, year, or a custom range. This filter allows you to look at an issue as it was being talked about on the web during a particular point in time. For example, what were views on the Mars Rover at the time it was launched as compared to the week before it landed?

Learn more

To find out the latest new features in Search visit:
google.com/insidesearch
To see the power of search, watch this video:
goo.gl/ZzLoZ



Enhancing and improving educational research



Google’s research and engineering work continues to inform and transform education

As part of our mission to build the most advanced and usable methods for information access, we support innovation in education technology through funding, advocacy, and technical expertise. While we do significant in-house research and engineering, we also collaborate with others, so that we can learn in ways that collectively help Google achieve its goals. In 2011, we invested \$28 million in education-related research.

Our research efforts are fully integrated, with activities located in almost every engineering group, as well as in the research group. At Google, research ideas can immediately influence engineering products, and product experience can directly motivate and shape our research agenda.

We see our role in three areas:

Supporting wide access to resources

We offer the opportunity for organizations to conduct data mining for educational uses and we encourage policies that support open education resources.

Making research easier

We provide tools such as App Engine, which offer people the ability to build and host applications on Google’s infrastructure.

Originating work of our own

We undertake in-house research and engineering to create tools and techniques that enhance teaching and learning, including Google Search innovations and increased accessibility features within Google Apps.

Learn more

For more information on Google’s research efforts, visit:

research.google.com



Using tools to transform how students and academia do research

Google Scholar makes a broad range of academic research accessible to a global audience

We want to make sure that people everywhere can gain access to scholarly research, no matter their geography or socio-economic level. Through Google Scholar, we have worked with hundreds of publishers to make their content as accessible as possible to the many millions of unique users we have per day across the globe.

The Library Links program enables libraries to connect their holdings to Google Scholar, allowing students to use the service to find scholarly materials that the libraries have licensed. More than 4,000 libraries are currently participating.

“Google is enormously popular – one of the great inventions of our age,” says Northwestern University Assistant Librarian Jeff Garrett. “With library Links, Google Scholar introduces a broad community to our scholarly resources, including people who might never have accessed these materials otherwise.”

“Google Scholar is a democratizing tool for research. People only need an Internet connection. Doctors in Ghana can access the same research as doctors in highly developed countries.”

- Darcy Dapra, Google Scholar Partner Manager and former graduate student

Learn more

To search academic articles by author, subject, publication, and more visit:

scholar.google.com

How to use Google Scholar video: goo.gl/Mtl7l



Searching the library without the card catalog



Google Books allows educators and students to search and preview millions of books from libraries and publishers worldwide

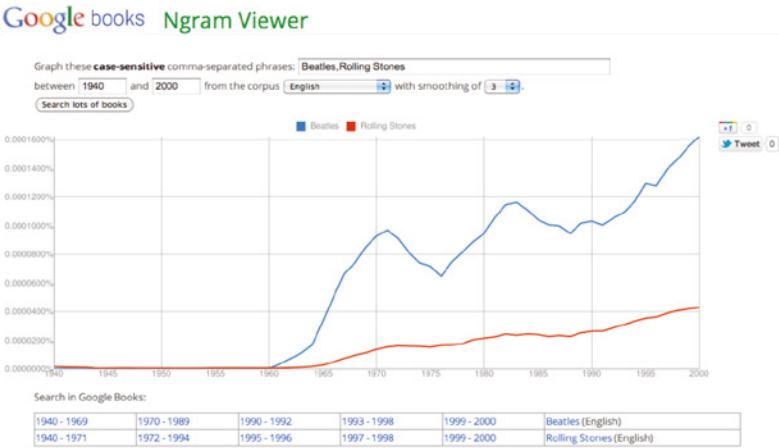


A search on Google Books is just like using regular search. When we find a book with content that contains a match for your search terms, we link to it in your results. When you search Google Books, you are searching more than 15,000,000 volumes written in 400+ languages.

Ngram Viewer allows you to compare two or more words in the texts of Google Books. On the right, we compared the words “Beatles” and “Rolling Stones” to see the occurrence of these words in books over time.

We added a number of new features to the Web Reader for Google eBooks in 2011 including Define, Search and Translate text, Private Margin Notes and Highlighting.

In addition to increasing the number of volumes in 2011, Google Books has added many helpful features, including the ability to search for multiple books in a series, to download citations from the texts, and to compare words in books via Ngram Viewer.



Google Books can unlock insights for people of all ages. One 4th grader named Lydia, aced her book report thanks to Google Books. Lydia’s mom recounts her daughter’s tale:

“Last year, when Lydia was in fourth grade, her teacher assigned the students to write a short biography about an historical figure. In addition to writing a short report, the children were also assigned to orally present it to the class, in costume, along with four or five ‘relics’ related to the person. Lydia chose to focus on First Lady Abigail Adams, wife to John Adams, the second president of the U.S.

In the course of her research, Lydia learned that John and Abigail corresponded extensively with each other, since they were frequently separated. Lydia thought it would be fun to have one of these letters as one of her relics. At once, we thought of Google Books. Lydia and I went online and found the cover page and selected a few more pages in a matter of moments.”

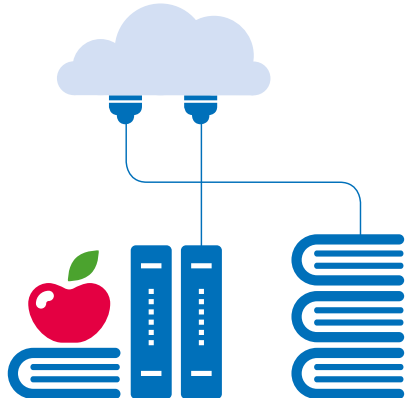


Lydia, a 4th grader who used Google Books to excel in her history project.

Learn more

Use Google Books and try out the Ngram Viewer at: books.google.com

Video on using Google Books in healthcare: goo.gl/AcmQn



Taking trips without leaving the classroom

Geo tools allow teachers and students to explore the Earth, Mars, the moon and the sky, using **Google Earth** and **Google SketchUp**

Google’s Geo tools (Google Maps with Street View, Google Earth, and Google SketchUp) are popular with many educators—not just in science and geography, but across the curriculum—because they engage students in discovering and envisioning their world.



Google Earth

Google Earth allows you to fly around Earth, the moon, Mars, and the sky to view satellite imagery, terrain, and 3D buildings—from galaxies and constellations in outer space to the canyons and trenches of the ocean floor. In October 2011, Google announced that Google Earth had been downloaded more than 1 billion times since it was first introduced in 2005! There is an infinite universe of educational applications for Google Earth.



An image of the buildings in San Francisco from Google Earth.

Although many people know about Google Earth, we find that many teachers don’t know about all the useful tools within the application. Below are a few of the tools and features that can enhance teaching:

- **Historical imagery** - You can now move back and forth in time to show imagery from years and even decades past, revealing changes over time. Try flying south from San Francisco in Google Earth and turning on the new time slider (select the “clock” icon in the toolbar) to witness the transformation of Silicon Valley from farming community to tech capital of the world.
- **Ocean** - With Google Earth, you can drop below the surface of the ocean and explore sea floor in 3D. While you’re there, see videos and images of ocean life and logs of real ocean expeditions, from partners like National Geographic. You can even track the migration of animals like sharks, tuna, and turtles.
- **Moon** - Google Earth enables you to explore lunar imagery and access informational content such as Apollo landing sites, panoramic images shot by the astronauts, and narrated tours.

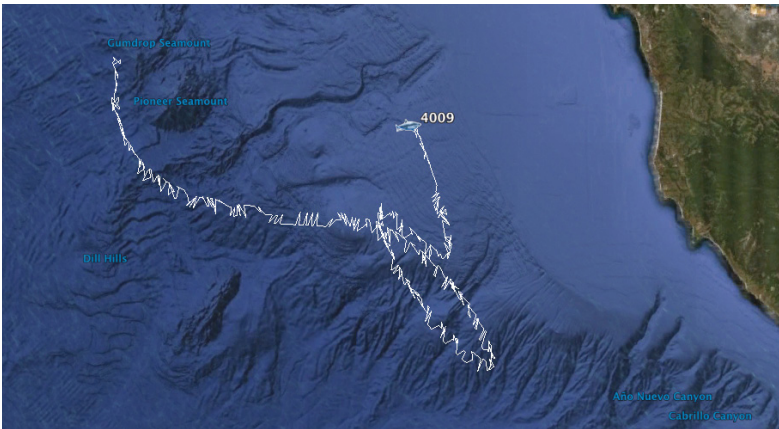
“Our 3rd graders are researching and creating virtual tours of South Africa as part of their social studies curriculum. They are researching cities, weather, airports, travel routes ... points of interest, etc. They are then [using Google Earth to create] .kmz files plotting a virtual trip to South Africa, highlighting the World Cup locations.”

- Primary School Administrator

Google Earth is empowering university-level educators as well. Professor Declan DePaor of Old Dominion University in Virginia (USA) has created a set of resources to help educators use Google Earth to teach Earth Science, including content that brings to life volcanoes, tectonic plates, and cut aways of other planets.

Professor David Kennedy of the University of Western Australia was comfortably seated in his desk chair in Perth when he remotely identified 1,977 potential archaeological sites in Saudi Arabia.

An image of shark tracking in Google Earth.



By scanning 1,240 square kilometers of the country using high-resolution imagery in Google Earth, Dr. Kennedy and his colleague Dr. Michael Bishop revealed 1,082 pendant-shaped ancient tombs and hundreds of other ancient sites—all without leaving home.

Learn more

To learn more about Google Earth for Educators visit:
sitescontent.google.com/google-earth-for-educators
Watch tutorial video 1 on Google Earth for education:
goo.gl/CavUg



Google SketchUp

 Google SketchUp is free, powerful, intuitive 3D modeling software. Primary and secondary educators and students from all over the world use SketchUp to explore, explain, and present their ideas using 3D models. SketchUp is being used in classes from history, science, and mathematics to pre-architecture and engineering.

“Google SketchUp has provided my students with an opportunity to become designers and modelers of everything from simple chairs to more complex items like our school buildings or their own dream house. Students take ownership of their work and meticulously create their designs based upon realistic measurements and appropriate detailing. The best part is, because Google SketchUp is free, all of my students have access to this powerful software.”

- Ken Shelton, Math Teacher, Walter Reid Middle School, Los Angeles, California

When teachers speak about the impact of Google Earth and Google SketchUp, they often mention the way it helps students become creators, not just consumers, of content. Mike Hathorn, a history teacher in Vermont, uses SketchUp in his digital history class.

The materials they have created are now being used by local 4th and 5th graders in their classrooms.

“SketchUp has allowed us to put the small town of Hartford, VT literally on the map. My students now read stories about our town and can appreciate them more because they appreciate the buildings in the town. Without the Google tools that are available I could not imagine my class being anywhere near as successful as it has become.”

- Michael Hathorn, Hartford High School, Hartford, VT



The town of Hartford, Vermont, as sketched up by Mike Hathorn's digital history class.

Learn more

To learn more about Google SketchUp for Educators visit:

sketchup.google.com/intl/en/industries/education.html

SketchUp for autism spectrum students

Google SketchUp is a great tool for individuals on the autism spectrum. Google's SketchUp team partnered with experts including the Autism Society of America and the Lifelong Learning Lab at the University of Colorado to launch Project Spectrum, which works to provide people on the autism spectrum with software and guidance to express their creativity and develop life skills. One student, Meg, was able to complete a SketchUp floor plan of her dream house, an aquarium building with rooms made of water. Her brother, Casey, who also created a floor-plan says: "It would have been so cool if we knew about SketchUp earlier." Casey even created a model within the model, placing a second floor-plan on his table inside his dream house.

“SketchUp has allowed our family to journey with Rachel in her unique world in ways that we couldn't before. We are not gifted with the visual and spatial abilities that our AST kids have. This gift is a core strength and feature of autism, and tools like SketchUp not only allow us to journey with them, but offer life skills and potential career tracks to our children. We are so excited about Rachel's new found desire, direction, and where it will take her.”

- Mother of Rachel

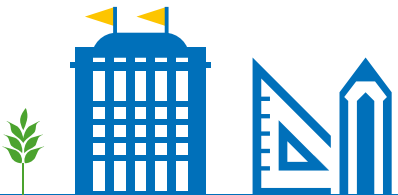
Learn more

Read more about Project Spectrum and download the manual of lesson plans at:
google.com/educators/spectrum.html
Video on using SketchUp in secondary:
goo.gl/i37uD
Video on using SketchUp in university:
goo.gl/qNCZL

Getting started

Both Google Earth and Google SketchUp have websites exclusively for educators. One of the most useful sections of the sites are the tutorial videos, which educators and students can use to quickly become proficient with products and tools.

Google Earth and Google SketchUp are offered at no charge. However, educators may wish to upgrade to the Pro versions of the software. For teachers, Google offers Statewide License Grant programs for Earth and SketchUp Pro, which gives the software to schools for free. As of the end of 2011, 38 US states have taken advantage of the Google SketchUp Pro Statewide License Grant, as have two states in Australia, four Canadian provinces, one UK county, and all of New Zealand. To find out whether your state already has a Pro license or how to apply for one, visit the educator sites noted in this section.



Harnessing the power of video for learning

YouTube videos enrich classroom instruction and engage students by bringing educational subjects to life



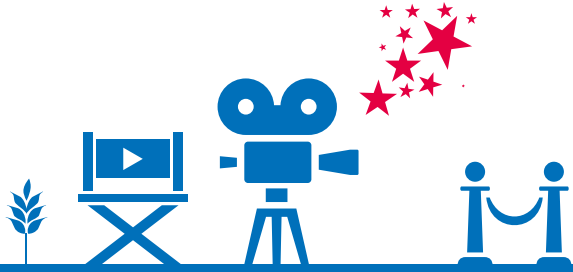
YouTube has a number of education-specific channels that teachers can use to complement classroom instruction, by bringing educational topics to life. YouTube also has hundreds of education-specific partners and hundreds of thousands of videos to help educators bring the power of video to their classrooms.

YouTube.com/EDU

YouTube EDU offers lessons from top teachers around the world, full courses from the world's leading universities, professional development material from fellow educators, and inspiring videos from global thought leaders. YouTube EDU contains videos from more than 440 universities around the world. These include some 250 full courses in which professors have uploaded multiple class videos from their syllabus.

"YouTube transforms my classroom from a small room in a typical elementary school enclosed by four walls, to a global classroom with no walls that spans throughout the entire universe. Thanks to YouTube I can pull up a video on just about any subject produced virtually anywhere in the world in an instant. My students get to experience what we are learning about instead of just reading about it in a textbook. They are able to watch historical moments, see and hear experts discuss a subject, and even create and upload their own videos to share with the world."

- Karen Mensing, 2nd grade teacher, Sonoran Sky Elementary, Phoenix, Arizona.



YouTube.com/Teachers

On this site, educators can see how their colleagues are incorporating video into their lessons and join the YouTube Teachers community. They can see how teachers use YouTube videos to enrich their lessons, spark a conversation, and make theoretical concepts come alive.

YouTube for Schools

YouTube for Schools is a network setting that school administrators can turn on to limit access to the educational content from YouTube EDU (rather than the entire site). Teachers can choose from hundreds of thousands of videos on YouTube EDU created by more than 600 partners such as the Smithsonian, TED, Steve Spangler Science, and Numberphile.

Learn more

To get your school signed up to use YouTube for schools visit:
youtube.com/schools
YouTube for Schools overview video:
goo.gl/tTUza



Top: Students using YouTube in school.
Bottom: Some of the content available on YouTube includes TED talks.

"YouTube is an amazing resource for Math and Language Arts, but my favorite application is to find software tutorials for almost any application. I have kids watch the tutorials instead of lecturing - they learn faster and retain more, plus they can rewatch as many times as they want."

- Jon Corippo, teacher

Fostering digital literacy



We support the teaching of **digital literacy** to help students use the Internet safely and effectively

We want to ensure all of our users—and especially young people—have a safe experience on the web, and we think the best way to do this is by giving parents and students the resources, tools and information they need to achieve digital literacy and become smart decision-makers.

Google works to achieve safety in three ways:

- Providing parents and teachers with tools to help them choose what content their children see online
- Offering tips and advice to families about how to stay safe and private online
- Supporting the work of child safety organizations who can speak on issues ranging from chat rooms to cyberbullying

Beginning early in 2012, most safety resources and information will be consolidated onto one comprehensive site called Good to Know (google.com/goodtoknow). Until then, parents, teachers and students can also refer to these websites for information about basic Internet use and web safety tools and activities:

Family Safety Center

At the center, you'll find step-by-step instructions for using safety tools built into Google products and other best practices for

families, and you can view advice from parents who work at Google. We've also added a section about managing geolocation features on mobile phones.

google.com/familysafety

Google for Educators

This Digital Literacy Tour is designed to spark discussion and allow students to learn through hands-on and scenario activities. On the site you'll find a resource booklet for both educators and students that can be downloaded in PDF form, as well as presentations to accompany the lesson and animated videos to help frame the conversation about digital literacy.

google.com/educators/digitalliteracy.html

Privacy Center

The central site on Google for all-things-privacy, this is where you'll find our Privacy Policy and information about our privacy tools.

google.com/privacy

Teach Parents Tech

Google-inspired and Google-run, this site allows you to select any number of simple tech support videos to send to friends and family. Videos range from basic functions (how to cut and paste) to more complex tasks such as driving directions. teachparentstech.org

Communicating and collaborating easily (and at no charge)

Google Apps for Education features a suite of free email and collaboration tools for schools & universities

Google Apps for Education

Google Apps for Education, a free version of Google's integrated web-based suite of email, calendar and documents, are actively used by upwards of 15 million students, staff and faculty at institutions in more than 146 countries. The services that are offered to nonprofit educational institutions include Gmail, Calendar, Docs (documents), Groups, and Sites. In addition to these core applications, users can also enable Google Apps accounts to access Google services such as Reader, Blogger, and Google Voice, and integrate with applications from the Education category of the Google Apps Marketplace.

Improvements in 2011

Teachers use apps such as Gmail in ways that help facilitate communication and learning, such as writing to a student's parents in their native language, or allowing student groups to work simultaneously on the same document at the same time.

As Google Apps for Education evolves, we continue to make them more effective and easy to use. Here are a few of improvements we made in 2011:

- **June: Mailbox size**—We expanded the size of the Google Apps for Education mailboxes from 7 to 25GB, still at no charge.
- **August: Offline**—First we launched offline Gmail, and in the weeks that followed we made offline Calendar and Docs available. Offline editing isn't ready yet, but we know it's important to many of you, and we're working hard to make it a reality.
- **October: Presentations**—We launched a new version of presentations with 50 new features, including improved transitions, themes and drawings.
- **November: Suggested times**—To make booking meetings easier and to save time, we've added a new 'Suggested times' feature to Google Calendar.

Google Apps for Primary and Secondary Education

From primary school to universities, Nairobi to Arizona, Google Apps for Education has transformed communication and organization systems in educational institutions.

States around the USA are providing access to Google Apps for Education via state level agreements. In December 2011, the Utah State Board of Education announced they would allow Utah students and teachers to take advantage of Google Apps for Education. State Superintendent of Public Instruction Larry K. Shumway said, "Google Apps for Education will allow greater collaboration between students, teachers, parents, and schools to advance academic achievement."

Utah is the 9th US state to sign a state-level agreement about the use of Google Apps in Education, with Rhode Island, Wisconsin, and Missouri also doing so in 2011.

Want to know more?

For more information on Google Apps for Education, including features and user stories, visit: google.com/apps/edu
Teachers and administration describing Google Apps: goo.gl/dB3JW



Positive feedback from teachers and administrators tells us that Google Apps is making primary and secondary classrooms more collaborative and engaging:

"Google Apps has worked out better than I could have ever imagined. We expected a more reliable, stable, and virus-free email. But we got more—a suite of integrated collaborative applications that are being used by teachers and in our classrooms."



- Scot Graden, Superintendent, Saline Area Schools, Michigan

"In the course of less than 6 months Google Apps for Education has become the technological center of nearly all operations at The Watershed School. Students are using Apps on a daily basis for their email, 98% of all document creation (by both students and faculty) is in Google Docs, and all school administration occurs via Apps."

- Cory Pavicich, Director of Educational Technologies, Watershed School in Boulder, Colorado



Google Apps for Higher Education

The number of schools using Google Apps for Higher Education is fast growing. By the end of 2011, 62 of the 100 universities on the US News & World Report "Best Colleges" list were using Google Apps for Education. Recently, 12 higher education institutions in Spain gathered for professional development and announced that they would be switching to Google Apps as their education technology provider.

"Feedback from our students was the deciding factor in our decision-making process. We asked them what they wanted, and the vote came in resoundingly for Google. We saw the switch as a great way of combining institutional systems with technology that the new generation of students was most familiar with."



- Professor Roger James, Director of Information Systems, University of Westminster, England

In addition to offering instructional benefits, Google Apps for Education help universities lower their costs in difficult financial times. For example, Brown University reports a \$1 million annual savings in switching to Google Apps, while the University of Minnesota reports they saved \$2 million a year in estimated cost avoidance.

"Switching to Google Apps provided us with a way to significantly improve the level of service provided to our students and alumni. At the same time, it reduced our IT operating costs and the complexity of our infrastructure."



- Ron Kraemer, Vice President for Information Technologies and CIO, The University of Notre Dame, USA

Learn more

For support in launching Google Apps for Education, including ideas of how to use Apps in your classrooms, check out the Guide to Going Google at: eduguide.googleapps.com
University in Cairo talks about Google Apps: goo.gl/mos1k



Discovering new tools for teaching and learning in Google+

Google+ provides new ways for teachers and learners to find and share information and connect with others online

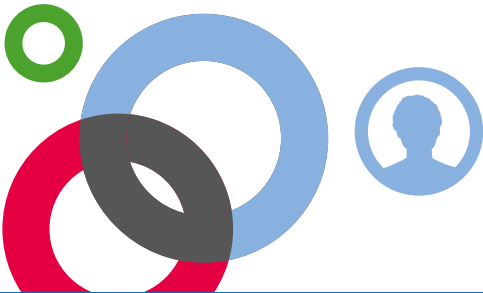
On June 28, 2011 Google introduced Google+, an online tool that makes it easy to connect on the web in real time. Below, we describe some of the ways educators are using Google+ for teaching and learning.

Google+ for Educators

- **Organize your contacts and share appropriately—Circles** make it easy for people to organize their work and social lives by sharing and streaming relevant content with the right people. With Circles, your “History department colleagues” don’t have to get an update about your morning workout, and your “Running Club” doesn’t see your ideas on the best topics for Western Civ class.
- **Learn the latest in education**—By adding a person to a Circle in Google+, you can see that person’s posts. For example, people have created a Circle called “EdTech”, and in it included bloggers and practitioners who talk about the latest in educational technologies.
- **Get ideas for lessons**—If you’re looking for a lesson starter for class on supply and demand, Google+ can perform a “supply demand” search that will yield current event news stories that illustrate it in practice, other people’s views on the topic, and images that bring the concept to life.

Learn more

To sign up for Google+ visit:
google.com/+
Overview video:
goo.gl/xRRsZ



Video-conferencing at the next level

Hangouts are live group video chats for up to 10 people—ideal for holding virtual office hours, or collaborating on a project when it’s not possible to physically meet in the same room. Hangouts are also a great way to connect with colleagues, students and family. With Hangouts with extras, you can share the screen and collaborate real-time in Google Docs.

Many educators use Google+ for office hours. When Dr. Ari Kohen, a professor at the University of Nebraska-Lincoln, had to relocate from his home close to campus to a new house an hour away, he began to use Google+ as another option for student office hours. “Anytime you use something new you don’t know how it will work,” he said. “But this worked great.” Kohen also used Hangouts to hold his review sessions for the last round of exams. “I was able to do more review sessions via Google+ than I could have in person.”

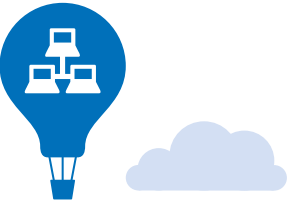
In 2011 Dr Jeremy Littau, a journalism professor at Lehigh University, introduced Hangout office hours as an option in his Media and Society class. He recently welcomed a new baby and so Hangouts were an effective time-management tool: “Two days a week I open a Hangout and have students pop in. During exam review, students come one at a time in my office but in Hangouts I can answer the questions for

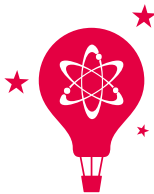


Students at Rice University in Texas use a Hangout.

a whole group at once. All the students are experiencing a benefit from a meeting with other students.”

“I organized a Hangout on Google+ with friends from math class. In order to make sure I would stay on task, I made a Circle for my math class friends, and set my availability to hang out to just them. We weren’t all on at the same time, but that’s what’s cool about Hangouts-- people can mingle, just like at school. Being able to watch YouTube lessons together and talk about our interpretations of problem solving processes along with that of the video’s creator was awesome (and it will be even better when we aren’t working on homework!).”
– Taylor Bell, student at Boise State student.





Making Learning Magical for Students

On the following pages are programs and resources explained in Section 1. For more information on each, you can scan the QR code to access the web pages, or you can visit google.com/edu

Google Code-In
13 to 17 year-olds
Global
Page 11



Computing &
Programming Experience
13 to 14 year-olds
US
Page 13



App Inventor
All
Global
Page 15



Google Science Fair
13 to 18 year-olds
Global
Page 17



YouTube Space Lab
14 to 18 year-olds
Global
Page 19



RISE Awards
Nonprofit organizations
Global
Page 21



Trailblazer Awards
16 to 19 year-olds
Select Europe
Page 21



Doodle 4 Google
Primary and secondary
Global
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Summer of Code
University students
Global
Page 26



Computer Science
Summer institute
Rising university students
US or Canada
Page 27



Android Camp
1st or 2nd year
university students
US or Canada
Page 28



Scholarships, Internships,
and Ambassador Program
Students in higher ed
Global
Page 33



Online Marketing
Challenge
Students in higher ed
Global
Page 34



Zeitgeist Young Minds
18 to 24 year-olds
Global
Page 35



Citizen Schools
USA
Primary and secondary
Page 37



Trebuchets in action
Secondary
Berkeley County,
South Carolina
Page 38



Data Center outreach
Primary and secondary
Various Locations
Page 39



GLIDE community
University students
Japan
Page 40





Empowering Innovative Communities

On the following pages are programs and resources explained in Section 2. For more information on each, you can scan the QR code to access the web pages, or you can visit google.com/edu

Computer Science For High School (CS4HS)
4-year universities
Global
Page 47



Geo Teachers Institute
Primary, secondary teachers
Global
Page 49



Search Education
All
Global
Page 50



Exploring Computational Thinking
All
Global
Page 51



Google Lit Trips
All
Global
Page 53



Google Code University
All
Global
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Google Faculty Institute
California
Page 58



100Kin10 (USA)
USA
Page 64



Teach for America (USA)
USA
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Google for Nonprofits program (USA)
USA
Page 65



Khan Academy
Global
Page 66



Nonprofits (UK)
- Generating Genius
UK
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Nonprofits (UK)
- Teach First
UK
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Nonprofits (UK)
- London Science Museum
UK
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Nonprofits (UK)
- International Mathematical Olympiad
Global
Page 69





Building a Foundation of Technology and Access

On the following pages are programs and resources explained in Section 3. For more information on each, you can scan the QR code to access the web pages, or you can visit google.com/edu

Search
Page 75



Research
Page 76



Google Scholar
Page 77



Google Books
Page 79



Google Earth
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Google SketchUp
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Chromebooks
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Project Spectrum
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YouTube for Schools
Page 85



Digital literacy
- Family Safety Center
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Digital literacy
- Google for Educators
Page 86



Digital literacy
- Privacy Center
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Digital literacy
- Teach Parents Tech
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Google Apps
for Education
Page 88



Google Apps for Education
- Guide to Going Google
Page 89



Google+
Page 90



Closing

While we are excited about the progress that students, educators, and nonprofits have made with the support of Google, we realize that we are only just beginning to see what is possible.

Our commitment to the people, communities and organizations that positively impact education is one that matters deeply to us. So we will keep building, iterating, and improving our programs and tools, and lending our support to educational communities around the world.

None of this work would be possible without you and the work you do to inspire students and enhance education through technology. We thank you and look forward to more collaboration in the coming years.

For more information, please visit google.com/edu

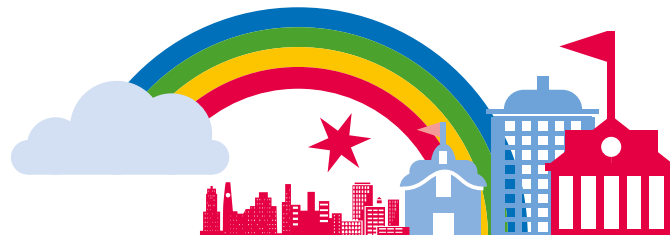


- If you want to share this report with others, please send them to google.com/edu/purpose.html where they can view or download an electronic copy of the report and leave feedback for us.
- To find out more about specific programs in this report, scan the QR codes in the back of this booklet on pages 92-99.

Acknowledgements

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google.com/edu

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